

HOW ORGANIZATIONS WILL MEET THE ISO 9001:2000 TRAINING  
REQUIREMENT

By

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ABSTRACT

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How Organizations Will Meet the ISO

9001:2000 Training Requirement

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The purpose of this study is to compare and contrast how two Western Wisconsin manufacturers planned to meet the new training requirement as stated in section 6.2.2 of the ISO 9001:2000 standard. Chapter I begins with an introduction to Cardinal FG and Global Finishing Solutions and the need for this study. Chapter II is a review of literature relating to the ISO standards, competencies, and assessing job requirements. Chapter III details the methodology and approach used by the researcher to identify how both organizations were planning on meeting the training requirement as outlined in the ISO 2000 standard. Chapter IV reports the findings and analysis of the research and Chapter V presents a summary, conclusions, and recommendations.

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## Chapter 1

### Research Problem and Objectives

#### Introduction

“You pay for a training program whether you have one or not”. An unknown person uttered that line and it seems like an absolute truth. Starting with apprenticeships and moving towards “sit by Joe and watch what he does” everyone seems to have a different opinion on how effective training should occur. W. Edwards Deming put it this way, “the aim of leadership should be to improve the performance of man and machine, to improve quality, to increase output, and simultaneously to bring pride of workmanship to people”(1986). How this is accomplished is the question that the new ISO 9001:2000 standard attempted to answer with its’ new training requirement. This new requirement is what two companies located in West-Central Wisconsin are attempting to interpret and implement in advance of their official ISO audit.

Cardinal FG, located in Menomonie Wisconsin, produces float glass that will eventually be used in the residential window market. The plant began operations in 1991 and has 205 employees that work rotating 12 hour shifts 24 hours a day, seven days a week, 365 days a year. One unique characteristic of Cardinal’s process is that it never shuts down. Making float glass is a continuous operation that can only be stopped for major maintenance and to rebuild the furnace every 10 to 12 years.

In 1995, Cardinal FG first became certified to the ISO 9002: 1994 standard. They have continuously retained the ISO certification and will attempt to be certified to the 2000 standard in October of 2003. Cardinal trains new employees using designated trainers who have demonstrated above average knowledge of the process. These trainers

use checklists to certify that the employee can perform all of the major tasks of that job at an acceptable level. The trainer and the supervisor of that area sign-off the checklist once the employee can perform a particular job with little or no assistance. This certification is electronically entered onto a training matrix for documentation and reference purposes. The majority of the training that occurs at the plant is done on-the-job.

Cardinal FG's Quality Policy emphasizes the importance of doing the job correctly, this policy states that "every employee is responsible for the quality of the product that reaches our customers. The customers' needs for quality, service, and value will be the driving force behind each decision."

JB I, located in Osseo Wisconsin, is a custom designer of industrial spray paint booths. In March of 2003, JB I went through a merger with Blowtherm USA and subsequently was renamed Global Finishing Solutions (GFS). Other products made by GFS include industrial washers, ovens, ductwork, and air makeup units. Global Finishing Solutions began operations in 1975, finding a niche in the finishing systems industry. Currently 135 people are employed with the majority being shop floor workers.

GFS trains workers by using the "buddy" system. A simple training checklist is used to ensure that all parts of the job have been shown to the new employee. The shop foreman of that area will then sign-off the checklist after the new employee shows that they can perform the job adequately. This checklist is entered into an electronic training matrix for documentation and reference purposes.

GFS's Quality Policy states that they "strive to meet or exceed our customer's requirements, on-time and defect-free, while continually improving our business."

The Quality Manager is responsible for maintaining and monitoring the ISO system at both Cardinal FG and Global Finishing Solutions. These Quality Managers process non-conformances, issue corrective actions, and investigate problems that are ISO related. They also update and maintain the Quality Manual on a continuous basis.

Both companies are now entering un-chartered waters by attempting to become certified and registered to the new ISO 9001:2000 standard but the basic philosophy remains the same “say what you do and do what you say.” David Hoyle (1994) suggest that if ISO 9001 were to be resolved into a single requirement it would be phrased along the following lines:

The organization shall establish, document, implement and maintain a System which will provide confidence to both its own management and the customer that the intended quality of its products and services will be, is being and has been achieved and which will ensure that its products and services supplied will conform to customer requirements.

One change to the ISO 2000 standard that companies may struggle to meet is the standard that addresses competence, awareness and training of internal employees. Companies must now determine the competence for personnel performing work affecting product quality. What is competence? How do you define it? How do you show that an individual is competent to perform a job? Who affects quality? These are just some of the immediate questions that will provide the basis for the purpose, objectives, and need for this study.



### Research Problem

Two small manufacturers located in Western Wisconsin are attempting to get certified to the ISO Q9001-2000 standard. Currently, neither business has the systems in place to meet the training requirements as stated in the 2000 standard. The purpose of this study is to compare and contrast how both companies will meet requirements of section 6.2.2 of the ANSI/ISO/ASQ Q9001-2000 standard.

### Research Objective

The objective of this study is to compare and contrast how two manufacturers plan to meet the training requirements stated in the ISO:2000 standard.

### Need For Study

Both organizations have yet to be certified to the new 2000 standard. They must determine how they will meet the new training clause given the limitations of their organizational resources and the tight timeline for registration. All 1994 certified companies desiring to be registered to the new standard must meet the 2000 standard by December 15<sup>th</sup>, 2003. Failure of ISO 1994 registered companies to successfully pass the ISO 2000 audit by the December deadline will result in the expiration of their current ISO registration.

### Definition of Terms

**Cardinal FG** – Float glass plant located in Menomonie, Wisconsin. FG refers to float glass, which is the process used at the Menomonie facility.

**Global Finishing Solutions** - A maker of custom designed equipment for the finishing industry including industrial spray paint booths, ovens, controls, and systems.

**ISO** – A generic, baseline family of standards written to be broadly applicable to a wide range of varying non-specific industries and products. These standards establish the basic requirements necessary to document and maintain an effective quality system.

**ISO 1994 Standard** – Provides guidelines for the selection and use together with the details of the quality management systems that can be used for internal or external quality assurance.

**ISO 2000 Standard** – An updated version of the 1994 standard. The primary difference between the 2000 and the 1994 standard is that the 1994 standard focused on procedures while the 2000 standard focused on processes.

**Section 6.2.2 (2000 standard)** – A human resource requirement of the 2000 standard pertaining to the employee training, competency, and the awareness of how each employee impacts the quality of the product.

**Task Analysis** – A method of documenting the tasks performed of a particular job. The results are analyzed and used to determine the knowledge, skills, training, and education needed to perform the job competently.

#### Limitations of Study

1. Comparing and contrasting only two organizations.
2. The limited time of the researcher.
3. Interviews in person were short due to time constraints of each participant.

In Chapter II a review of the literature will include a historical review of ISO, the criteria for the training standard, and how competencies of employees can be defined.

## Chapter II

### Review of Related Literature

#### Introduction

In the early 20<sup>th</sup> century, American businesses began to utilize technologies to produce products in a cost effective and efficient method. The goal was to design, produce, and sell products in mass production at a high standard. Starting with the well known Ford assembly line and moving on to McDonald's hamburgers, businesses desired to produce consistent products in mass quantity in a cost effective manner. As the century came to a close, the philosophy of producing a product with the same quality standard time after time was even more difficult as customers' demanded more choices and features for their money. The quality that customers desired needed to be "assured" so a quality standard for businesses was developed as the 1980's came to a close. This standard is known today as ISO 9000.

#### ISO Standards

The short designation for ISO 9000 was borrowed (as a pun) from the Greek word *isos*, which means "equal." *ISO 9000* is intended to convey the idea of the invariance that is possible when a standard is available (Badiru, 1995). Originally, the ISO 9000 family of standards actually consisted of five subdivisions. Badiru (1995) goes on to explain the five subdivisions:

**ISO 9000** – The roadmap that provides guidelines for selecting and using 9001, 9002, 9003, and 9004. ISO 9000 and 9004 are for guidance in the use of the standards.

**ISO 9001** – It contains 20 elements and presents a model for quality assurance for firms involved in the design, manufacturing, and installation of products and/or services.

**ISO 9002** – This contains 18 elements and is for firms involved in manufacturing or production of products and/or services only. The requisite design is usually specified by customers.

**ISO 9003** – This contains 12 elements and is for firms involved in the distribution, inspection, and testing of manufactured products or services only, without any production or installation activities. It presents a model for quality assurance in final inspection and test.

**ISO 9004** – This provides guidance for a supplier to use in developing and implementing a quality system and to determine the extent to which each system element is applicable. It examines each of the quality system elements in greater detail and can be used for internal and external auditing purposes. It provides guidelines for users in the process of developing in-house quality systems.

Depending on what business the organization was in, they would choose which standard it wanted to meet. Each individual company that wished to meet a particular and appropriate standard was to register for compliance with that standard. An auditor, who had been certified by ANSI/ISO to be an ISO auditor was then paid to go through the quality system and inspect the system for compliance. If the company passed inspection they were given a registration number and formally designated as “ISO registered.”

The roots of ISO can be traced back to the late 70’s when the British Standards Technical Committee 176 was launched to set forth generic quality principles to satisfy the need for an international minimum standard for how manufacturing companies establish quality control methods (Voehl, 1994). The goal behind setting down quality

principles for manufacturers was for consumers to have assurances that in the world market, whether buying food, electronics, or supplies, they would be getting quality for their money. Many countries came together to begin to build a system of quality standards that included three major components with 20 sub-systems that comprise a “quality system”.

The ISO 9000 family of quality standards was originally issued in 1987, and then was revised in 1994 to clarify some of the elements. The International Organization of Standardization (ISO, Geneva, Switzerland) reviews the standards every five years to determine validity. When the new standards were released in 2000, it was an attempt to make the standards more global so businesses of every nature and size could implement an ISO system of management. According to Herbert Monnich Jr. (2001) states that new standards were:

...A shift from documenting quality system procedures to focusing on developing and managing an organization’s family of effective business processes. This is a major improvement, allowing small and medium sized businesses to establish and document a simple quality management system that meets the needs of his customer and his business while fully complying with ANSI/ISO/ASQ Q9001-2000 requirements.

The 1994 standard for training employees focused on establishing and maintaining a documented procedure for identifying training needs and then providing training for all employees that may affect product quality. The only burden on an organization during an audit was to provide evidence of what training was done and who

went to that training. There were no requirements that focused on the effectiveness of the training or the competency of the employee performing the job.

The major shift of the standard now requires organizations to monitor the competence, awareness and training of it's employees. The organization shall:

- a) determine the necessary competence for personnel performing work affecting product quality,
- b) provide training or take other actions to satisfy these needs,
- c) evaluate the effectiveness of the actions taken,
- d) ensure that its personnel are aware of the relevance and importance of their activities and how they contribute to the achievement of the quality objectives, and
- e) maintain appropriate records of education, training, skills and experience (ASQ, 2000).

The elements of this standard suggest that the skills, education, training, and experience of employees of an ISO certified organization are just as valuable to the success of a business as the systems they work within. Professionals must be able to communicate with and interact effectively with peers, supervisors, and internal or external customers. Managers must be able to lead, solve problems, and act decisively. Supervisors must be able to assume ownership of production problems. These traits are called competencies, which are enduring characteristics of a person that result in superior on-the-job performance (Spencer, 1995).

## Competencies

Competencies were first introduced in the late 1950's by psychologists Robert White and David McClelland (Dubois, 1993). As McLagan says, "Without clear competency criteria, recruiters select, managers manage, trainers train, and career planners plan to different (and sometimes even conflicting) images of the capabilities required to do a job (1980, p.23).

One of the big challenges faced by businesses seeking ISO 2000 registration is determining whether the competency is a personal trait inherent to the individual or a learned trait, something that can be taught to the individual. When analyzing and documenting a job, knowledge, skills, and abilities need be categorized. Hiring managers may be looking for someone who possesses strong writing skills, and they may be willing to train someone to write in a particular style, whereas they may not be willing to train someone to learn how to be a good listener. On the other hand, other hiring managers may feel strongly that they can teach listening skills, so a bias enters the picture.

Tools such as a task and job analysis may reduce the bias of a hiring manager by providing objective criteria when hiring or analyzing employees. Job analysis is a process of gathering, organizing, evaluating, and reporting work-related information (Butruille, 1989). Task analysis is a method of determining the knowledge, skills, tools, conditions, and requirements needed to perform a job (Callahan, 1985).

The main objective of both of these tools is to gather as much information about a particular job so the hiring manager can create an objective list of qualifications needed to be successful in this position. This position description can be used to link job requirements to current and future training needs.

Zemke and Zemke point out that if you can identify the key skills, knowledge, and personal attributes that make a master performer successful at a given job, then group these things into appropriate clusters, you have a set of “competencies” (Jan. 1999). These competencies become a blueprint for what skills the hiring manager is looking for when considering new candidates.

Documentation of the competencies needed to perform a job provides a basis for developing a training plan. The 2000 standard requires ISO certified organizations to provide training and then evaluate the effectiveness of the actions taken. Robinson and Robinson insist that the focus should be on results oriented training that is driven by business needs, it helps the organization achieve its goals, provides people with the skills and knowledge they need to improve their performance, assess readiness of the work environment to support learned skills, and has measurable results that can be tracked. They go on to point out that interdependence between the human resources department function and management is essential. Together, they can achieve a great deal, but when mutual support and partnership are absent, there is a low probability that efforts to develop people will be successfully transferred to the job (Robinson & Robinson 1989).

The 2000 standard puts more emphasis on proving that an organization not only hires competent employees but trains current employees to ensure that they are competent. John West (2002) suggests that organizations can change the emphasis of the training program from planning and conducting training to fully understanding the competency needs of the workforce and providing for those needs. The 2000 standard indicates that the organization must show that not only did training occur but the quality



and amount of training was sufficient that the employee can perform the job to a documented standard.

Cardinal FG and Global Finishing Solutions rely heavily on training checklists as a basis for performing on-the-job training of their employees. This technique for training is a necessity for smaller manufacturers who cannot afford a training department to provide professional trainers. Cardinal FG uses designated trainers who have shown superior work habits to train new employees while GFS uses more of a buddy system with no designated trainers. Both companies involve their respective supervisors to evaluate the performance level of the new employee when the training is completed. The trainee is asked to perform the tasks listed on the checklist without assistance. If the employee performs up to the required standard, these checklists are signed-off by the supervisors and trainees to formally document that training was completed and effective.

In a multi-skilled, high performance system, skills are often required to be certified by a training team before an employee is allowed to work alone using that skill. Certification will include verbal testing and demonstration of the skill in the work area (Juran, 1999).

Part of training personnel to become competent in their jobs is making sure the employee understands the ramifications of making a mistake. Each employee must be aware of the relevance and importance of their activities and how they contribute to the achievement of the quality objectives. Juran states that the purpose of quality-related training is to enhance the value of the products and services of the organization, through

the systematic improvement of skills and knowledge of trainees who contribute to those products and services (1999).

Based on this information, two businesses located in Western Wisconsin were chosen to determine how they were planning on meeting the ISO 9001:2000 training standard. In Chapter III, the research method, design, and population will be defined.

### Chapter III

#### Research Methods

##### Introduction

Cardinal FG and GFS are transitioning from the ISO 9000 series 1994 standard to the new ISO 9001:2000 standard. One of the new requirements of the 2000 standard is section 6.2.2 dealing with competence, awareness, and training of personnel. An interview with Cardinal FG and GFS was setup to determine how each respective company was going to attempt to meet the criteria listed in section 6.2.2 of the ISO 9001:2000 standard.

The main areas of concern for each organization was how they were going to determine the competencies of their employees, perform training to meet these competencies, and evaluate the effectiveness of the actions taken.

The design for this research was a qualitative research design. It was the goal of the researcher to compare and contrast the processes being implemented by both companies to meet the new training standard. The small sample size allowed the researcher more time to conduct a semi-structured interview with representatives from both companies.

The researcher contacted representatives from Cardinal FG and GFS to conduct an interview based on the parts of section 6.2.2 of the ISO 9001:2000 standard that directly related to competency, awareness, and training of employees. The outline for the questions was e-mailed to both companies with a confidentiality agreement designed to protect the rights and privacies of the participants from both organizations. A time and

date was setup to meet with the subjects, an one hour time limit for questioning was agreed upon by all parties.

### Research Design

There are many tools that can be used when collecting qualitative data such as surveys, questionnaires, focus groups, interviews, and observation. The size of the population, time of the researcher, or the type of research, will often times dictate which method will be used to conduct the research. Gupta (1999) points out that interviews are one of the easiest tools for gathering information about organizational or performance issues. He goes on to explain that a more in-depth discussion with senior management can help clarify perspectives on strategic training issues. The size of the population and the access to key personnel allowed for the researcher to use an interview to collect qualitative data about Cardinal FG and GFS.

There are three general methods for collecting data through interviewing research subjects. The closed question interview allows the researcher to use the same questions for each respondent and then use a coding system to score the answers. Advantages of this type of interview include results in scores that could be used for standardization and it helps eliminates fluctuations in data that result from differences in when and how questions are asked. One major potential disadvantage of the closed question interview schedule is that it does not allow the interviewer to respond to any revealing information that might be obtained. The interviewer must stick to the questions as they have been written and cannot react to any new information given by the respondent unless this can be done within the context of the following question or questions (Crano & Brewer, 2002).

The open-ended interview relies on themes and objectives that the interviewer would like to explore. The most obvious difference between an open and closed ended interview is that open ended questions places more demands on the interviewer, who must transcribe the respondent's replies (Crano & Brewer, 2002). Researchers use semi-structured interviews in order to gain a detailed picture of a respondent's beliefs about, or perceptions or accounts of, a particular topic. The method gives the researcher and respondent much more flexibility than the more conventional structured interview, questionnaire or survey. The researcher is able to follow up particularly interesting avenues that emerge in the interview and the respondent is able to give a fuller picture.

At the same time, after the researcher has conducted a thematic qualitative analysis, it is also possible to include in the write-up some indication of the prevalence of the themes within the responses collected.

One criticism of using the interview technique is that the interviewers behavior or facial may affect the data collection adversely. Crano and Brewer point out the following:

“If an interviewer were not to respond in any way to the behaviors and replies of the respondent, the sensitive person-to-person interaction that plays an important role in any interview might be destroyed, and the quality of the obtained data adversely affected. Researchers employing completely “non-directive” techniques can testify to this fact, for in their attempt to force the interviewee to guide and control the course of the interview, they often succeed only in destroying the rapport that they so diligently courted in the initial phases of interaction” (2002).

Bordens and Abbot (1999) suggest that the questions should be read in a neutral manner...also, to try to anticipate any questions that responders may have, interviewers should be prepared to answer with standardized responses. Responders for Cardinal FG and GFS were made aware that the questions sent were guidelines for discussion to allow the interviewer flexibility to explore interesting information uncovered during the interview.

### Population and Sample

The population the study involved were representatives from two similar sized manufacturers in Western Wisconsin. Participants had at least three years of ISO related experience and had attended various ISO related seminars. All of the participants were certified as an ANSI/RAB lead auditors and were involved with internal ISO audits.

Cardinal FG and GFS were selected because they had previously been certified to the ISO 1994 standard and were attempting to become certified to the ISO 2000 standard. The willingness to participate in the study, proximity to the researcher, and time to complete the research were the primary factors when identifying the population.

### Instrumentation

The first objective of this study was to determine what tools or methods were going to be used to determine the competency of the employees who directly affected the quality of the product. The second objective of this study was to determine how these organizations were going to determine the effectiveness of the training needed by the employees. The third objective was to find out what steps they were going to take to ensure that each employee were aware of the relevance and the importance of their activities and how they contribute to the achievement of the quality objectives. The final

objective was to discover why being ISO certified was important to their respective organizations. The questions were based on the wording of section 6.2.2 of the ISO 9001:2000 standard.

### Content Analysis

A six question interview outline was used as basis for conducting an open-ended interview. The open-ended interview used for this study allows the researcher to perform a content analysis of the documented data. The term *content analysis* broadly describes a wide-ranging and diverse domain of techniques designed to describe and explicate a communication or series of communications in a systematic, objective, and quantitative manner (Crano and Brewer, 2002).

The scripts and notes taken from the interviews were analyzed to look for comparisons and contrasts between the two organizations. Key words, ideas, and phrases were used to understand the approaches that each company were planning on taking to meet the 6.2.2 ISO 2000 training standard. The researcher compiled the unstructured responses into useful data for further qualitative analysis in future studies.

## Chapter IV

### Report of Findings

Cardinal FG, a plant of just over 200 employees, first became registered to the ISO 9002:1994 standard in 1995. Cardinal has continuously maintained their ISO certification. Global Finishing Solutions, a plant of about 130 employees, became registered to the ISO 9001:1994 standard in 2001.

The importance of being ISO certified differs slightly for each company. Cardinal FG does not use the ISO registration for any marketing purposes. This includes not using signage on the building that some companies will use to declare their ISO certification. Over 90% of Cardinal's customers are internal Cardinal plants, who do not require them to be ISO certified. One of Cardinal's major customers did indicate that all of their suppliers needed to be ISO certified but has reversed their stance. The management team at Cardinal FG discussed the value of attempting to be certified to the 2000 standard and indicated that they will go through with the registration process.

GFS markets their ISO certification in all of their catalogues and sales literature. Their building has a sign on the outside indicating they are an ISO certified organization. A few GFS customers require them to be ISO certified. GFS believes that the ISO Quality Management System is a tool that drives continuous improvement.

See Tables 1,2, and 3 for a complete breakdown of how each organization will attempt to meet the training standards for section 6.2.2 of the 2000 standard.



Table 1

Question	Cardinal FG	Global Finishing Solutions
How does your organization plan on ensuring employees, that directly affect the quality of the product, are competent?	On-the-job training checklists are used for every job. Training is tracked on a color-coded training matrix. Trainer and supervisor sign-off the checklist when the trainee can perform the job without assistance. When hiring, a job description will be used to compare the knowledge and training needed to do the job against the education and experience of the candidate.	Performed a task analysis on jobs that may directly impact quality. The task analysis was the basis for developing on-the-job training checklists and a minimum job requirements spread-sheet. This spreadsheet will be used when hiring. The information on the spreadsheet describes the knowledge, training, education and experience needed for each job.

Table 2

Question	Cardinal FG	Global Finishing Solutions
If training is needed to ensure a competent workforce, how will your organization evaluate the effectiveness of that training?	Most of the product sold from the Menomonie plant end up at other Cardinal facilities so immediate customer feedback will be an indicator of training effectiveness. Any quality issue or trends that relates to mistakes by plant personnel will be examined to determine if further training will be needed. Customer surveys will also be used as a broader indication of training effectiveness.	A training evaluation form will be created for each identified position that will be filled out by the area supervisor/manager after 90 days and then again at the employees first annual review. Customer surveys will also be used as a broader indication of training effectiveness.

Table 3

Question	Cardinal FG	Global Finishing Solutions
What steps will your organization take to ensure that your personnel are aware of the relevance and importance of their activities and how they contribute to the achievement of the quality objectives?	No plans at this time.	All new hires will go through and ISO presentation detailing the quality policy, quality objectives and their respective area procedures and work instructions. The presentation includes area specific examples of what is required of each employee to meet the quality objectives of the company.

Cardinal FG and GFS indicated that these attempts to meet the training requirement of section 6.2.2 of the ISO 2000 standard would change if the initial audits recommended some changes. Representatives from both companies were using “best judgment” and tools that would fit their respective cultures to meet this requirement. Cardinal FG indicated that they would develop job descriptions for all personnel working in the plant including upper management. GFS said that they would develop a minimum job requirement spreadsheet for only those positions they felt would directly affect quality.

In Chapter V, the conclusion of this research will be summarized and recommendations will be made.

## Chapter V

### Conclusions and Recommendations

#### Conclusion

ISO 9001:2000 standard is more process focused than previous ISO 9000 versions. Cardinal FG, GFS, or any other organization that is seeking ISO 2000 certification must determine how to make their current process of training “fit” the standards laid out in section 6.2.2. Both companies will lean on their registrars for feedback on their approach to satisfy the requirements in section 6.2.2 of the 2000 standard.

Cardinal FG is taking an all encompassing approach to attempt to meet the new training standard. Based on feedback from audits, literature sources, and seminars, they want their registrar to know that they have analyzed every position in the plant and documented through job descriptions the job requirements for each employee. These job descriptions will describe the knowledge, skills, training, and experience needed to perform the tasks to a competent level. They believe this approach will give any employee the confidence to answer the following question from an auditor, “How do you know you are competent to do this job?”

In the future Cardinal FG will control all of their job descriptions through their quality documentation system. In some organizations this can be a daunting task if machines and processes are changing all of the time. Job descriptions would need many revisions and constant administrative maintenance if the processes were constantly changing. Cardinal’s process for making glass does not change from day to day. It is a 24

hour, seven day a week, 356 days a year operation, with very little change in job duties or processes. Cardinal's approach to training and understanding the competencies of their employees through the use of job descriptions may be a better fit for their culture and business.

Global Finishing Solutions chose a different approach when analyzing the competencies needed for their employees. GFS chose to do a general task analysis of each position that may directly impact quality. They documented the results of the task analysis in the form of a minimum job requirements spreadsheet for all of the analyzed positions. This simplified approach fits their culture because of the nature of their business. The educational and skill level requirements of their employees were more consistent from one job to another so the approach for meeting the new training requirement did not need to be as considerable as Cardinal's. GFS's decision not to develop and control job descriptions through their quality documentation system will result in less administrative work for an organization that could not support new positions or added duties.

### Recommendations

Cardinal FG's decision to document all of the jobs in the plant and then controlling those job descriptions through the quality documentation system will be a challenge for that organization. Based on conversations with ISO auditors from private registrars this approach seems to be the popular choice among those organizations seeking ISO 9001:2000 registration. This avenue has to be carefully examined because it could cause additional administrative work. The biggest criticism of the 1994 standard was the large documentation needed to become certified. The revised 2000 standard tried

to reduce the documentation requirement. Documenting many job descriptions seems to be a step back to the 1994 standard where documentation was the key to becoming certified to the standard. More analysis is needed when comparing Cardinal FG's approach of documenting jobs with Global Finishing Solutions approach of using a minimum job requirement spreadsheet based on a task analysis.

Further analysis on the process for evaluating the effectiveness of the training is needed for both organizations. Cardinal FG will be taking a more reactionary stance to possible training issues by letting quality data and customer feedback draw attention to performance problems. Cardinal FG will use production documentation to trace back who was responsible for the error and then take appropriate action including re-training the employee. GFS will be taking a more proactive approach by institutionalizing an automatic ninety-day performance evaluation for employees who get trained in a new position.

The criteria stated in clause 6.2.2 outlines specific training related actions that must be taken but it is up to each organization to determine how they will meet these criteria. Both Cardinal FG and Global Finishing Solutions decided a course of action that they believed fit their employees needs and met the standard of section 6.2.2. According to ASQ (2000) competence is the combination of education, experience, training and skills. It's up to a responsible management team to determine the right combination for each job classification.

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## Appendix A

1: Cardinal FG interview answers

2: Global Finishing Solutions interview answers



Survey Questions based on the 6.2 Human Resources section in ISO 9001/2000 standard  
– Cardinal FG

1. How does your organization plan on ensuring employees, that directly affect the quality of the product, are competent?

*Use on the job training checklists during training. These checklists are based on the process that was documented as required by the ISO 1994 standard. Training is tracked using a color-coded training matrix. The colors mean different things – Red: don't know job, Yellow: In training, Green: Totally trained, Blue: Trainer. Checklist signed off by supervisor, trainer and trainee when training is complete.*

2. If training is needed to ensure a competent workforce, how will your organization evaluate the effectiveness of that training?

*Use customer surveys as basis for determining the effectiveness of training. If surveys are ok – no training needed, if not, then possible training intervention is needed. Use job descriptions for all employees in the plant to determine competencies needed for each position. Don't pick just jobs that affect quality to document, are unable to make that determination (where do you stop).*

3. What steps will your organization take to ensure that your personnel are aware of the relevance and importance of their activities and how they contribute to the achievement of the quality objectives?

*Not sure what they will be doing with that.*

Background Information

4. How many employees work at your plant?

205

5. When did your organization become ISO registered to the 1994 standard?

1995

6. Why is being ISO registered important to your organization?

*Cardinal FG does not use the ISO registration for any marketing purposes. This includes not using signage on the building that some companies will use to declare their ISO certification. Over 90% of Cardinal's customers are internal Cardinal plants, who do not require them to be ISO certified. One of Cardinal's major customers did indicate that all of their suppliers needed to be ISO certified but has reversed their stance. Cardinal FG Menomonie discussed the value of attempting to be certified to the 2000 standard and indicated that they will go through with the registration process.*

Survey Questions based on the 6.2 Human Resources section in ISO 9001/2000 standard  
– Global Finishing Solutions

1. How does your organization plan on ensuring employees, that directly affect the quality of the product, are competent?

*Perform a task analysis on all jobs that may impact the quality of the product in and effort to understand the competencies needed to perform these jobs.*

*This data will provide the on-the-job checklists, possible training classes needed and job aides for new and current employees. JR will also have a checklist of skills , experience, and education that is desired for each position when selecting new hires.*

2. If training is needed to ensure a competent workforce, how will your organization evaluate the effectiveness of that training?

*A training evaluation form will be created for each identified position that will be filled out by the area supervisor/manager after 90 days and then again at the employees annual review.*

3. What steps will your organization take to ensure that your personnel are aware of the relevance and importance of their activities and how they contribute to the achievement of the quality objectives?

*All new hires will through an ISO Orientation presentation detailing our quality policy, quality objectives and their respective area procedures and work instructions. The presentation includes area specific examples what is required of each employee to meet our quality objectives.*

Background Information

4. How many employees work at your plant?

*135*

5. When did your organization become ISO registered to the 1994 standard?

*June, 2001*

6. Why is being ISO registered important to your organization?

*Tool that drives continuous improvement*

*Marketing tool and some customers require it*

## Appendix B

### 1: Cardinal FG Job description



JOB DESCRIPTION REPORT	Work Profile
Cold End Technician	12/7/98 Page 3

## ESSENTIAL WORK ACTIVITIES

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Essential activities are defined as task statements with ratings equal to or greater than 60 on a 100 point scale of task criticality. Criticality ratings take into account the importance of the task in meeting job objectives and the time spent performing the task. These ratings were provided by people who know this job well. See WPS Technical Report for details.



### H1: RESPONDING PHYSICALLY

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Physical activity - manipulating objects by hand  
 Physical activity - coordinating hand and foot to lift product off of conveyor belts into shipping racks.  
 Using physical coordination to operate machinery  
 Physical activity - maintaining a steady hand  
 Strenuous finger / hand movements  
 Maintaining physical balance while stacking glass.  
 Physical activity - fine movements with the fingers

### H2: PERFORMING PHYSICAL TASKS

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Removing items from machinery  
 Manually loading or stacking heavy materials (40lbs. +)  
 Lifting / carrying heavy loads by hand (40lbs. +)

### E7: DECIDING

---

Making quick decisions under time pressure  
 Deciding a course of action on own initiative  
 Deciding a course of action in conjunction with others  
 Choosing appropriate materials to complete a job

### E6: CHECKING OBJECTS, WORK, PROCEDURES

---

Examining products or items for fine defects such as small scratches or dust.  
 Examining products or items for gross defects such as chips or edge defects.  
 Checking products for satisfactory production quality  
 Noting defects in an object or structure  
 Checking a physical process is carried out correctly  
 Checking work completion to a set standard

### H6: CONTROLLING VEHICLES

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Controlling a land based vehicles including forklifts, sweepers and scrubbers (not car / truck)  
 Operating a remote-control vehicle including overhead cranes.

### E5: CHECKING WRITTEN / PRINTED INFORMATION DESIGNS

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Checking tickets or other formal authorization  
 Checking documentation

## Appendix C

- 1: Global Finishing Solutions Internal Audit of Section 6.2.2
- 2: Global Finishing Solutions Minimum Job Requirements Spreadsheet

### **Resource Management/HR**

Description: Internal audit of availability of resources

Started: 04/11/03 Completed: 05/02/03

Lead Auditor: Amy Mayer

**Status: Conforms**

#### **6.2.2 Competence, awareness and training - HUMAN RESOURCES**

1. *How does the organization determine the necessary competence for personnel performing work affecting product quality?* 6.2.2[1]a[1]

##### **Observations**

The Minimum Job Requirement spreadsheet outlines the analysis of each position that may impact product quality on the basis of skills, education, experience and training needs. The results of this analysis identifies the core competencies from which an employee will be determined competent.

**Status: Conforms**

2. *How does the organization provide training or take other actions to satisfy these needs of personnel performing work affecting product quality?* 6.2.2[1]b[1]

##### **Observations**

- New Employee Orientation - Safety Training - Quality Management System Training - OJT / job specific training

**Status: Conforms**

3. *How does the organization evaluate the effectiveness of the awareness, training and competence of its personnel?* 6.2.2[1]c[1]

##### **Observations**

The Training Evaluation form, including New Employee, Safety, Quality and Job Specific Training and a section for comments, will be filled out at the 6 mo. evaluation for new employees. Both the employee and the manager will sign off the effectiveness of the training in relation to how well the employee can perform his/her duties. Comments will be used to improve the training.

**Status: Conforms**

4. *How does the organization ensure that its personnel are aware of the relevance and importance of their activities and how they contribute to the achievement of the quality objectives?* 6.2.2[1]d[1]

##### **Observations**

Orientation: New hire training includes going over the QMS documentation, policy, and objectives. OJT provides hands-on experience for the "correct" way of performing tasks. Quality Training: Presentation includes a handout with the quality policy and quality objectives are correlated with the specific tasks of the new hire. Note: Both the policy and the objectives are posted throughout the facility.

**Status: Conform**

## MINIMUM JOB REQUIREMENTS

Position	Skills	Education	Experience	Training
<b>Customer Service Tech (inside)</b>	Organizational, written and verbal communication, customer service, problem-solving, analytical reasoning, conflict-resolution, basic computer, data entry, filing and record keeping		HS equivalent or 1-3 months related experience	Product Blueprint Software - ERP
<b>Territory Manager/ Sales Engineer/ Backup/ Small Parts</b>	Marketing and sales, interpersonal, written and verbal communication, problem-solving, customer service, basic computer, mathematics including algebra and geometry, data entry, organizational		BA or 1-2 years related experience, or equivalent combination of both	Blueprint reading Software - ERP Vendor New Equipment
<b>Buyer</b>	Interpersonal, organizational, written and verbal communication, basic computer, data entry, problem-solving, basic mathematics, analytical reasoning, detail-oriented, ability to interpret market conditions		HS or 3-6 months related experience	Software - ERP
<b>Operations Manager</b>	Leadership, reasoning, conflict resolution, analytical reasoning, written and verbal communication, basic computer skills, organizational, problem-solving, basic mechanical reasoning		HS equivalent or 5-7 years related experience	Blueprint reading Software - ERP Vendor New Equipment
<b>HR Manager</b>	Organizational, presentation, written and verbal communication, facilitation, conflict resolution, basic computer, data entry, filing		Associate degree or 6-12 months related experience	Benefit package Employment laws and regulations OSHA