DEVELOPMENT OF MS ISO 9001: 2008 MANAGEMENT SYSTEM FOR AUTOMOTIVE EXCELLENCE CENTER (AEC) AT UNIVERSITI MALAYSIA PAHANG

AMIRUL ALIFF BIN JAMALUDIN

BACHELOR OF ENGINEERING

UNIVERSITI MALAYSIA PAHANG

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AMIRUL ALIFF BIN JAMALUDIN

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ABSTRACT

In this thesis, the knowledge of development for MS ISO 9001:2008 Quality Management System is studied theoretically. This study is to establish the quality manual and operation procedures based on clause 1, clause 2, clause 3, clause 4, clause 7 and clause 8 of ISO 9001:2008 quality management system for Automotive Excellence Center (AEC). AEC need to implement MS ISO 9001:2008 Quality Management System since this implementation basically provides a unique framework for AEC to establish a customer satisfaction oriented quality system that is internationally recognised and can be independently assessed and certified. Study was mainly carried out by literature study, discussion with supervisor and preparing the letter go along with visit to International Islamic University Malaysia that already get their certification in MS ISO 9000 Quality Management System. From that visit, there will be surveying process, analysis of the surveying, result and discussion of the implementation of MS ISO 9000 Quality Management System and conclusion. This thesis will note down all the requirements that list in clause 1, clause 2, clause 3, clause 4, clause 7 and clause 8 based on MS ISO 9001:2008 Quality Management System through the establishment of quality manual, operation procedures, work instruction and documentation. This establishment of quality manual and operation procedures hopefully can maximum the staff and AEC efficiency based on knowledge of MS ISO 9001:2008 Quality Management. Hopefully that the result and discussion come out will contributed to Automotive Excellent Center in Universiti Malaysia Pahang to achieve their mission to provide world class research equipment and facilities for automotive research and collaboration with domestic and foreign research institutions and universities for automotive development and knowledge sharing.

ABSTRAK

Dalam tesis ini, pengetahuan mengenai pembangunan Sistem Pengurusan Qualiti MS ISO 9001:2008 telah diaplikasikan. Kajian ini dibuat untuk membangunkan manual kualiti dan prosedur kerja berdasarkan fasal 1, fasal 2, fasal 3 fsal 4, fasal 7 dan fasal 8 berdasarkan Sistem Pengurusan Qualiti MS ISO 9001:2008 untuk Pusat Kecemerlangan Automotif (AEC). AEC dilihat perlu melaksanakan MS ISO 9000 kerana pelaksanaan ini asasnya dapat menyediakan rangka kerja yang unik untuk AEC memperkukuhkan kepuasan pelanggan. Tesis ini dijalankan dengan membuat penilaian rencana, perbicangan dengan penyelia dan penghantaran surat lawatan serta lawatan ke Universiti Islam Antarabangsa Malaysia yang telah pun mendapat pensijilan Sistem Pengurusan Qualiti MS ISO 9001:2008. Dari lawatan tersebut akan dibuat proses pemantauan, menganalisi maklumat yang diperolehi semasa pemantaun, keputusan dan perbincangan mengenai perlaksanaan Sistem Pengurusan Qualiti MS ISO 9001: 2008 serta kesimpulanya. Tesis ini akan mencatatkan keperluan-keperluan yg terdapat dalam fasal 1, fasal 2, fasal 3 fsal 4, fasal 7 dan fasal 8 berdasarkan Sistem Pengurusan Qualiti MS ISO 9001:2008 melalui penubuhan manual kualiti, prosedur, arahan kerja dan dokumentasi. Penubuhan manual kualiti dan prosedur diharapkan dapat memaksimumkan kecekapan kakitangan dan kecekapan AEC berdasarkan pengetahuan Sistem Pengurusan Qualiti MS ISO 9001:2008. Akhirnya, berharap keputusan dan cadangan dari kajian ini boleh disumbangkan kepada Pusat Kecemerlangan Automotif di Universiti Malaysia Pahang untuk mencapai misinya bagi menyediakan kemudahan dan kelengkapan untuk penyelidikan dalam bidang automotif serta berkerjasama dengan institut penyelidikan dalam dan luar negara untuk pembangunan sektor automotif dan berkongsi pengetahuan.

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LIST OF ABBREVIATIONS

AA	Administrative Assistant
AD	Assistant Director
AEC	Automotive Excellence Center
A&R	Admissions and Records
CAQAD	Centre for Academic Quality Assurance and Development
CRC	Curriculum Review Committee
CQC	Council of Quality Culture
DD	Deputy Director
DMR	Deputy Management Representative
DO	Document Officer
EO	Executive Officer
FD	Finance Division
HEI	Higher Education Institution
HOD	Head of Department
IA	Internal Audit
ISO	International Organization for Standardization
MR	Management Representative
MRM	Management Review Meeting
NCR	Non-conformance Report
QAU	Quality Assurance Unit
QMS	Quality Management System
RAC	Research Admission Committee
RER	Research Evaluation Rating
TER	Teaching Evaluation Rating

TQM	Total Quality Management
UMP	Universiti Malaysia Pahang
WW II	World War II

CHAPTER 1

INTRODUCTION

1.1 INTRODUCTION

Since its introduction in 1987, ISO 9001 has been the target of criticism and considerable debate. Much of this is due to a misunderstanding and misapplication of the requirements. Some practitioners of quality disciplines view the requirements as too generic to be of any significant value. Some organizations view certification as simply the "ticket" for doing business. Purists state that it is physically impossible to manufacture products or deliver services defect free on a continuous basis. And some organizations view certification to be just one more mandated cost, a cost for which there is no return on investment.

In 1979, Phil Crosby created quite a stir in business when his book Quality is Free1 was published. What Mr. Crosby was saying is that "quality," that is, a product or service that conforms to requirements, is the natural outcome of a well-planned and implemented manufacturing or service business. It is "non-quality" that results in the extra, profit limiting, cost to business. Simply said, if you plan correctly, make product or deliver service correctly, provide on-time delivery, you will make money – assuming your pricing is correct and affordable.

With the introduction of ISO 9001:2000, the business world now has a generic model for a quality management system that, when designed, developed and implemented, will provide the framework for assuring that customer requirements are defined, quality product or service is made or delivered on time, and that product/service and the management system are improved on a continuing basis.

However, with the emphasis on the terms "system" and "process," many readers of ISO 9001:2000 miss the linkage or tie-in between the specific requirements and product or service quality. This paper will provide this linkage, sometimes as an overview, sometimes with specific links. The reader will also be provided with a view of the dynamics and interactions of various processes, and hints at what to audit for when assessing the quality management system.

1.2 HISTORICAL

DURING WWII, there were quality problems in many British high-tech industries such as munitions, where bombs were going off in factories. The adopted solution was to require factories to document their manufacturing procedures and to prove by record-keeping that the procedures were being followed. The name of the standard was BS 5750, and it was known as a management standard because it did not specify what to manufacture, but how to manage the manufacturing process. According to Seddon, "In 1987, the British Government persuaded the International Organization for Standardization to adopt BS 5750 as an international standard. BS 5750 became ISO 9000."

ISO 9000:1987 was also influenced by existing U.S. and other Defense Standards ("MIL SPECS"), and so was well-suited to manufacturing. The emphasis tended to be placed on conformance with procedures rather than the overall process of management — which was likely the actual intent.

ISO 9000:1994 emphasized quality assurance via preventative actions, instead of just checking final product, and continued to require evidence of compliance with documented procedures. As with the first edition, the downside was that companies tended to implement its requirements by creating shelf-loads of procedure manuals, and becoming burdened with an ISO bureaucracy. In some companies, adapting and improving processes could actually be impeded by the quality system.

ISO 9001:2000 combines the three standards 9001, 9002, and 9003 into one, now called 9001. Design and development procedures are required only if a company does in fact engage in the creation of new products. The 2000 version sought to make a radical change in thinking by actually placing the concept of process management front and center. ("Process management" was the monitoring and optimizing of a company's tasks and activities, instead of just inspecting the final product.) The 2000 version also demands involvement by upper executives, in order to integrate quality into the business system and avoid delegation of quality functions to junior administrators. Another goal is to improve effectiveness via process performance metrics — numerical measurement of the effectiveness of tasks and activities. Expectations of continual process improvement and tracking customer satisfaction were made explicit.

Future Version: 2008. The ISO 9001 technical committee has started its review on the next version of ISO 9001, which will in all likelihood be termed the ISO 9001:2008 standard, assuming its planned release date of 2008 is met. Early reports are that the standard will not be substantially changed from its 2000 version.

As with the release of previous versions, organizations registered to ISO 9001 will be given a substantial period to transition to the new version of the standard, assuming changes are needed; organizations registered to 9001:1994 had until December of 2003 to undergo upgrade audits.

The applying organization is assessed based on an extensive sample of its sites, functions, products, services and processes; a list of problems ("action requests" or "non-compliance’s ") is made known to the management. If there are no major problems on this list, the certification body will issue an ISO 9001 certificate for each geographical site it has visited, once it receives a satisfactory improvement plan from the management showing how any problems will be resolved.

An ISO certificate is not a once-and-for-all award, but must be renewed at regular intervals. In contrast to the Capability Maturity Model there are no grades of competence within ISO 9001.

1.3 OBJECTIVE OF THE RESEARH

1. To study and analyses the requirements ISO 9001:2008 quality management system at Automotive Excellence Center (AEC), Universiti Malaysia Pahang.
2. To establish the quality manual based on clause 1, clause 2, clause 3, clause 4, clause 7 and clause 8 of ISO 9001:2008 quality management system at Automotive Excellence Center (AEC), Universiti Malaysia Pahang.
3. To establish the operation procedures of ISO 9001:2008 quality management system at Automotive Excellence Center (AEC), Universiti Malaysia Pahang.

1.4 SCOPE

1. Establish a quality manual based on ISO 9001:2008 requirements at AEC.
2. Establish an operating procedure based on ISO 9001:2008 requirements at AEC.
3. Establish a work instruction based ISO 9001:2008 requirements at AEC.
4. Establish a supporting document based on ISO 9001:2008 requirements at AEC.

1.5 PROBLEM STATEMENT

Automotive Excellence Center (AEC) is a new department that established in UMP to allow extensive research and development in the auto motive field. Since they are a new department, there was a lack of management system in AEC and they need to enhance the lack of time by time to ensure their vision to be a world class Automotive Excellence Center. AEC need a proper management system to ensure their effectiveness in research and development related to automotive field. So, the approach to MS ISO 9001: 2008 is the best way for AEC to achieve their organization objective because MS ISO 9001: 2008 quality management system is a basically model that provides a unique framework for AEC to establish customers satisfaction. Furthermore, this implementation can provide a benchmark for AEC to identify their management effort besides recognized the deficiencies that occur in AEC that can cause a failure to AEC to achieve their objective.

The qualification of MS ISO 9001: 2008 need to be apply in AEC to give a guidelines to all staff and AEC by enhance their performance to improve the standards harmony to the principle of UMP to become a world class university. The implementation of MS ISO 9001: 2008 must be consistent with AEC practice to ensure the management system to be effective.

CHAPTER 2

LITERATURE REVIEW

Chapter 2 introduces the fundamental concepts that are necessary to understand the ISO's process approach in higher education institution for research and development. Besides that, it is also briefly talk about the definition, benefits, and establishment of quality system to make management system in organisation more efficiently.

2.1 INTRODUCTION

The ISO 9000 Quality basically a model that provides a unique framework for any organisation to establish a customer satisfaction oriented quality system that is internationally recognised and can be independently assessed and certified. It complements TQM since quality is seen as a process, can be managed and can provide a methodology for continuous improvement. The system can also be regarded as one of the approaches towards achieving best practices in research and development in educational field. In adopting this system any higher education institution (HEI) could ensure that its teaching and learning processes are of creditable standards and quality.

Declining quality of researchers, increase competition and growing mandates for accountability by accreditation associations, legislatures, and funding bodies, and the increasing concern for applying best practices in the research-development services, has caused many HEIs to focus on quality, a concept originated from the manufacturing sector. The effectiveness of the quality concept in other sectors provided the momentum for higher education institutions to adapt this concept and practice it in their own domain (Kanji *et.al*, 1999). The successful acceptance and implementation of quality into higher education are often assisted by externalities such as conducive government regulations, economic conditions, confident leaderships and a certain level of stress to initiate a need for a change (Idrus, 2001; Packard, 1995).

2.2 IMPLEMENTATION OF ISO 9000 QUALITY SYSTEM

In the United Kingdom, the first university to implement and obtain ISO 9000 certification for its full scope of activities was Wolverhampton University. The University's initial adoption of the TQM approach to quality produced high expectation but had very little to show at the end of the day because of the lack of focus (Doherty in Subramaniam, 1988). It switched to the ISO 9000 quality system mainly because it was felt that an independently certified quality system would place the university in a better market position as compared with its competitors. With the adoption of the ISO quality system in guiding the best practices in the education institution such problems as rigidity in the research-development process could be ironed out. The university also felt that the discipline of writing the quality manual, identifying procedures and writing work instructions would provide a much better grasp of the University's internal processes, and the links with the internal and external customer or stakeholder. The Quality Management System was intended to form the base for a TQM culture of continuous improvement across the university. Kanji (1998 in Kanji, 1999) says that ISO 9000 could be integrated with TQM for the development of a total quality system where quality improvement can be achieved by examining the organisation's processes in terms of process definition, process improvement and process design.

It is obvious that there are some differences in the application of ISO 9000 quality management system in the manufacturing sectors and in higher education institutions. In the HEI, education management is usually divided into two principal divisions of operation, namely academic and administration. Adopting the system in education administration is much easier compared to the academic area, where certain adjustments are necessary. However, the latest ISO 9000 series that is ISO 9001 Version 2000 introduced in October 2000 is more generic and flexible in nature, and embraces both customer requirements and customer satisfaction as an integral part of the standards. With the inclusion of elements such as customer requirements and customer satisfaction in the model for quality and continuous improvement, the use of the process-based model could guide best practices in research and development.

2.3 CONTENTS OF ISO 9001

ISO 9001:2000 Quality management systems — Requirements is a document of approximately 30 pages which is available from the national standards organization in each country. Outline contents are as follows:

(i) Foreword
(ii) Section 0 Introduction
(iii) Requirements

- Section 1: Scope
- Section 2: Normative Reference
- Section 3: Terms and definitions (specific to ISO 9001, not specified in ISO 9000)
- Section 4: Quality Management System
- Section 5: Management Responsibility
- Section 6: Resource Management
- Section 7: Product Realization
- Section 8: Measurement, analysis and improvement

In effect, users need to address all sections 1 to 8, but only 4 to 8 needs implementing within a QMS. The standard specifies six compulsory documents:

(i) Control of Documents (4.2.3)
(ii) Control of Records (4.2.4)
(iii) Internal Audits (8.2.2)
(iv) Control of Nonconforming Product / Service (8.3)
(v) Corrective Action (8.5.2)
(vi) Preventive Action (8.5.3)

2.4 PROCESS-BASED MODEL OF ISO 9001: 2000

The ISO 9001:2000 quality management system is a ‘process model’ with the integration of four major clauses as shown in Figure 2.1.

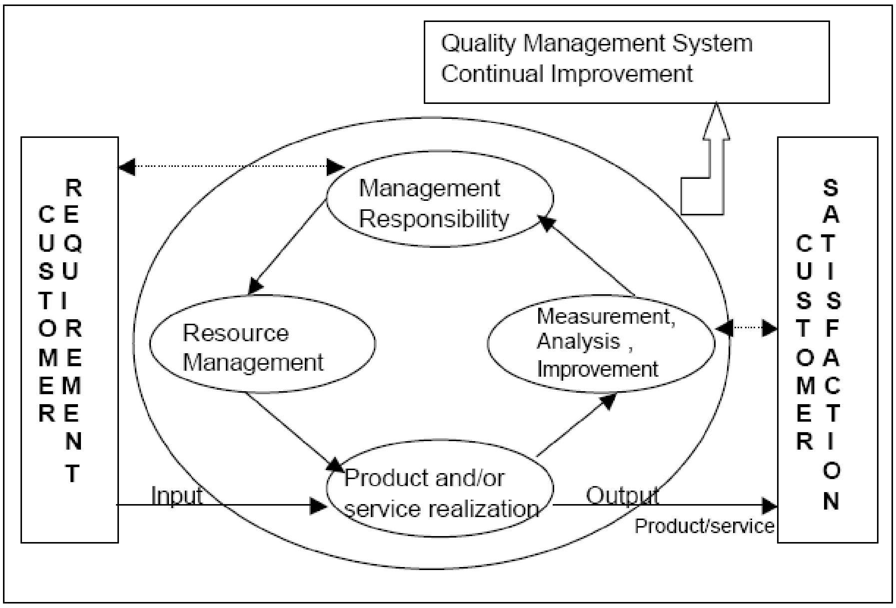

Figure 2.1: Quality Management System Process Model

Source: MS ISO 9001: 2000 Requirements

In brief, management requirements are defined under Management responsibility, necessary resources are determined and applied within Resource management; processes are established and implemented under Product/service realisation; while results are measured, analysed and improved through Measurement, analysis and improvement (MS ISO 9001: 2000). An important clause in the model is the opportunity for continual improvement.

In general, this model emphasizes the importance of identifying and understanding customer needs and expectation to ensure that customer requirements are met. Measurements of customer satisfaction are then used as feedback to evaluate and validate whether customer requirements have been achieved. The management review will then provide feedback to top management for change authorization and improvement opportunities.

2.4.1 Relationship between Customer Requirement, Input, Product Realization, Output and Customer Satisfaction

Based on the ISO 9000: 2000 process-based model as described in Figure 2.1, the relationship between customer requirement, input, product realization, output and customer satisfaction, and elements of measurement, analysis and improvement is presented below in Figure 2.2.

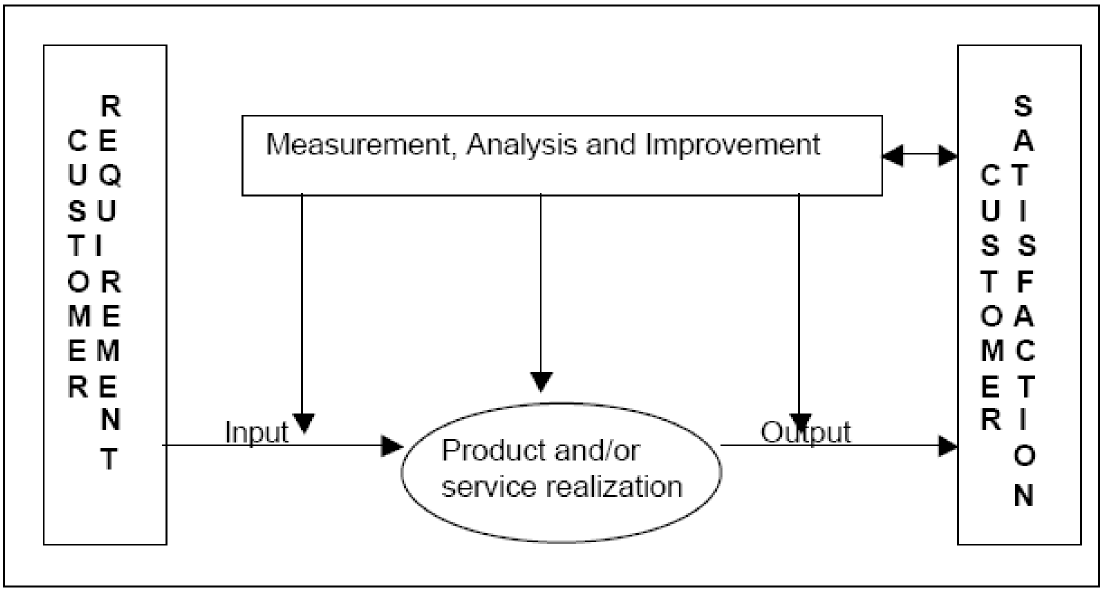

Figure 2.2: Relationship between Customer Requirement, Input, Product Realization, Output and Customer Satisfaction

Source: MS ISO 9001: 2000 Requirements

2.4.1.1 Customer Requirement

In ISO terms, an organization produces the product or service based on the requirements stated by the customer. The importance of customer requirements is that these serve as input for meeting customer satisfaction and should be incorporated into the best practices in product realization or service delivery.

2.4.1.2 Input

The customer requirement serves as vital input in terms of specifications that will influence the process to produce the specified product. If the organization provides services, the customer requirement will determine the nature of the services provided.

2.4.1.3 Product Realization

Product realization refers to the part of the process that will convert the customer requirements into an output that both meets the requirements of the customer and that would not jeopardize the quality. The whole organization, the people, the process and the product are synergistically mobilized and coordinated towards product realization or service delivery.

2.4.1.4 Output

Output refers to the product and/or service that are a result of product realization but one that fulfills the customer requirements. Output could be categorized into two: the output of each sub-process in product realization and the finished or final output/product of the overall business process which fulfils customer requirement and achieve customer satisfaction.

2.4.1.5 Customer Satisfaction

Once a customer has purchased or used the product or services offered by the organization, the customer will be able to respond to whether the services or products fulfill the customer requirements.

2.4.2 Measurement, Analysis and Improvement

At each step of a quality management system, some form of measurement has to be conducted at every stage of the process and of each product/output. The customer needs to tell the organisation whether the services or product supplied is at the desired level or not. Once feedback is gathered, an analysis needs to be done to determine whether any corrective action has to be taken or not. If there is no need for correction to take place, the emphasis will be on efforts for continual improvement to ensure that the high standard is achieved and maintained.

2.4.3 Customer-driven and Process-focus Best Practices in Research and Development

Based on the ISO process-based model conceptualized in Figure 2.1 and Figure 2.2, best practices in research and development using this quality model should focus on the customer and the processes. It is believed that for such a model to be transportable and be effectively utilized in sectors that provide research and development services it is essential that the whole system be customer-driven and process-focus. This is certainly the approach that organisation has taken in ensuring that the quality system defined in ISO 9001: 2000 provides useful guidelines for best practices in its research and development practices.

2.4.4 Customer-driven best practices in teaching and learning

Best practices in teaching and learning using the ISO 9001: 2000 process-based model should be customer-driven. The focus on the customer includes the following parameters:

i. identifying customer requirement which will serve as essential input in the teaching and learning process.
ii. delivery of the research and development services or processes which refers to product realization.
iii. output from the best practices of the research and development process that fulfils the identified requirements stipulated by the customers

2.4.5 External Customer requirements

The external customers encompass the professional and statutory bodies and the industry that will employ the graduates. What they need and what they want in terms of the graduates is very important. We expect our graduates to compete in a market where they are sought after. In order to ensure this, we have to rely heavily on what the external market decrees. Feedback, market analyses and needs analyses are the tools used to objectively identify the requirements of the external customers.

The requirements stipulated by the respective and varied external customers serve as integral input to best practices and must be translated into the curriculum design. The curriculum must reflect the knowledge and skills that the external customers want. The curriculum design must be up-dated and modified in line with the demands and the development of the industries. The up-dating and up-grading must also be reflected in the research and development process. The credibility and the marketability of the graduates will depend very heavily on this process.

2.4.6 Teaching and learning Process (Product realization)

In order to ensure that the best practices are applied, organisation controls and monitors the 3 Ps of the organization. These are essentially the People, Process and Product. How the organisation capitalized on the 3Ps and other essential elements in the system, such as management practice, management of non-conformance product and instilling the principles and practices of TQM which together contribute to the formation of best practices in its teaching and learning process is further elaborated below:

a) **The focus on the 3P's**

Best practices in the research and development in education field focus on three aspects, termed the 3P strategy that focuses on people, process and product since they are the fundamental substance of an organization.

(i) People

The focus on people centers on encouraging creativity in the laboratory environment in addition to creating competency in the field of expertise. Flexibility is given in the use of technology and the policies formulated that are appropriate to the research and development environment. The provision of techniques and technologies would encourage creativity, in which the academic staff is given the freedom to disseminate knowledge in the laboratory using any suitable technique fit for student-lecturer interaction. Printed materials, CD Rom, online materials, online communication, face-to-face to name a few, are types of learning preference available for application in the laboratory. Flexible provision regarding policies covers general guidelines for conducting students-lecturer interaction. No specific instructions or rules are applicable for laboratory activities. However, to create competency in the field or area, the course content and the syllabus are synchronized so that they are in synergy with the requirement of the University, relevant professional bodies and other stakeholders or invested parties.

(ii) Process

The process, on the other hand, involves the research and development activities in producing quality product. This requires identifying activities that need to be controlled, monitored and oversee throughout the complete cycle of the process.

(iii)Product

Product according to ISO 9000 series is output that is intended by a customer. The product of the organisation involves the final product, which is the development product, and the process product, which involves the researcher projects, training reports, and course work materials. Should the materials not meet certain specifications (as outlined in the curriculum and the course outline), the item would be returned for correction before being allowed to pass through to the next stage of the process. This is to ensure that product meet the requirements of customers at every stage of the process. Non-conformance product is dealt with in a manner proper to research setting.

b) **Management Practice**

The management of organisation incorporates a power-sharing structure. This structure is a medium through which the management support is realized. It involves empowering key personnel like Head of Department, Head of Panels, Course Coordinators and coordinators of other research-development related committees with well-defined authorities and responsibilities, detailing them in job descriptions.

The length and breadth of this empowerment and the authorities stipulated cover processes such as approving research-development modules (for Head of Panels), formulating, selecting, validating and recommending appropriate staff to oversee vital activities (Heads of Courses) and establishing contacts with third parties (Heads of Courses and respective coordinators). Without such support, it would be difficult to implement and sustain the smooth running of research-development process in educational field.

c) **Non-conformance Product Management**

Where it involves non-conformance product in teaching and learning in educational context, only the process output would be considered. The final product, i.e. the graduates, would not be brought back into the system for reworking. The process of non-conformance output considered would be students who are have difficulties and who show signs of not conforming to the desired level. Where it involves non-conformance product in research and learning context in education field, only the process output would be considered. The final product, i.e. the graduates, would not be brought back into the system for reworking. The process of non-conformance output considered would be students who are have difficulties and who show signs of not conforming to the desired level.

d) **Instilling TQM**

Apart from ensuring quality in the teaching and learning process via ISO Quality System, the university undertakes measures to ensure that academic activities are continuously improved from time to time. This continuous improvement involves the use of analytical and statistical tools, and the use of indicators to measure and analyse performance at each stage of the process, performance of people and assessment of graduates. The evaluation on the process capability would bring about process improvement, while performance indicators of staff would lead to training needs, coaching activities and the use of mentor-mentee approach. Product evaluation would generate new and better curriculum that keeps in touch with time and space, as well as other critical needs of the society. The evaluation would then be used as the catalyst for improving process performance towards better implementation of the teaching and learning process at the university.

Evaluation on the whole system would lead to benchmarking process in order to improve further the performance of the system toward increasing customer satisfaction, and creating loyalty on behalf of both the staff and the customer.

2.5 CONCLUSION

In the context of a higher education institution, implementing best practices in research and development using ISO 9001:2000 should focus on the whole quality management system. This focus should entail:

(i) the incorporation of customer requirements in the research and development process.
(ii) the measurement of quality in the final product, product of sub-processes, research and development process and people directly and indirectly involved in these processes.
(iii) management support to facilitate the effective implementation of the research and development process.
(iv) resource management for efficient utilization of resources and continuous improvement of the quality management system to achieve world class standard.

In the context of higher education institutions, adopting best practices in research and development will ensure the production of quality product development that will meet the needs of the industry and the respective external customers; the practice of efficient research and development processes through feedback on customer satisfaction and for the organization as a whole, it is a trademark or recognition for ensuring standard. As quality is a journey and not a destination, higher education institutions should continue the journey by benchmarking the research and development processes with renowned institutions to ensure it is of a world class standard.

CHAPTER 3

METHODOLOGY

3.1 INTRODUCTION

Chapter 3 is based on methodology that related to this project. Methodology is one of the most important elements to be considered to make sure the fluent of the project and get expected result. In other words the methodology can be described as framework where it contains the elements of the work based on the objectives and a scope of the project. A good framework can get the overall view of the project and get the data easily. This chapter included literature study, requirement and document development, implementation of standard, discussion and conclusion.

3.2 LITERATURE STUDY

In the beginning of the project, it is important to understand the title of the project which is the important of international standard in industries, an implementation of ISO 9001:2008 at Automotive Excellence Center, UMP. Literature study is the way to understand the title. So, the correct and useful source information can be gained. Beside are the methods to get information for literature study:

3.2.1 Primary Source

The main source of the thesis is from book and journal which also called primary source. Primary source is very essential to complete the whole thesis. It is a reliable source than secondary source. All the information that takes from the primary source is more accurate than secondary source. Since, ISO is widely applied from 1926 until nowadays, thus, all the information related to ISO are quite easy to search. Most of the literature study is from primary source which are book and journal. The entire primary source is written by expertise or professional. Sometimes, the book and journal can guide to understand about the implementation of MS ISO 9001:2008 at Automotive Excellence Center, UMP.

3.2.2 Secondary Source

Secondary source is from internet. It is not advisable to take the information directly from the internet because the article or website may not be written by the expertise or professional. It may be written by unknown stranger based from their experience. From the internet there have a lot of article and website explaining about ISO 9001:2008. Mostly about what is ISO 9001? Benefit of ISO 9001 and so on. This proves that there have a lot of information can gain through internet. Since, it is not quite reliable, all the information that take from internet needs to filter before used it. Most of the secondary source is use in the introduction part in each chapter.

3.2.3 Discussion with supervisor.

The information that gathered from primary source and secondary source which not understand must be discuss with supervisor for better understanding. Hence, discussion with supervisor is very important to guide the whole thesis in the proper way. Moreover, the discussion can generate new idea. Therefore, understanding of the information will be clearly.

3.3 SURVEYING

Surveying is from the visiting of other university. Every requirements that has been observed must be write down systematically for easy reference when implement ISO 9001:2008 at AEC. The surveying process includes letter preparation, deal with Quality Assurance Unit (QAU) from other university and university visit.

3.3.1 Letter Preparation

Letter preparation is a first step need to do in this surveying process. It is hard to go to the other university to get information due to time and distant constraints. Some of the university will say that is the privacy. Therefore, to overcome the problem the inquiry letter need to prepare. The inquiry letter should included title, objectives, scope and project background for the university further reference. The letter also asks the permission to make an interview and study their implementation of ISO 9000.

3.3.2 Deal with other university's Quality Assurance Unit (QAU)

After send the inquiry letter, the next step is deal with the director of QAU which is follow up the call by calling the university to confirm that they already receive the letter. This is to remind the university to reply the letter as soon as possible because some of the university will ignore the letter.

3.3.3 University Visit

When the university agree and reply the inquiry letter, the visiting date will be stated by the university. Before visit the university, the questions that want to be asked for the university to prepare the answer for the question that want to ask. Besides that, it can save time and avoid unnecessary question or miscommunication for the purpose of the visit.

3.4 ESTABLISHMENT OF THE QUALITY MANUAL, OPERATION PROCEDURE, WORK INSTRUCTIONS AND DOCUMENTATION

Methodology in implementation of ISO 9001:2008 involves the establishment of "Four Level" system. This is achieved by the development of a hierarchy comprising four tiers of documentation, namely the Quality Manual, Operation Procedures, Work Instruction and Documentation as shown in Figure 3.1

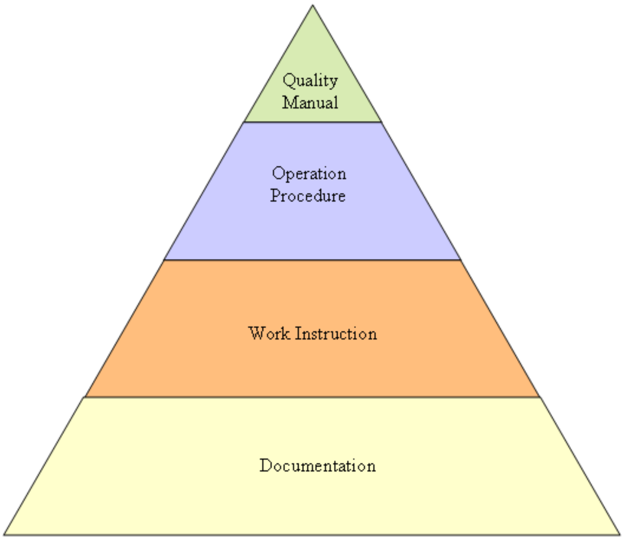

Figure 3.1: Methodology in Implementation of ISO 9001:2008

Source: Developing Documented Quality System

3.4.1 Quality Manual

The top level document, normally called the quality manual, states the organisation's policy with respect to costumer and quality management system requirements and gives an outline description of the quality system. Typically, it comprise the quality policy statement expressing top management's firm commitment to achieving quality; a description of the organisational structure, roles and responsibilities of departments or key management positions; outlines of the management systems, sometimes called system elements which collectively make up the overall quality system and a list of procedures.

3.4.2 Operation Procedures

A procedure is a document which describes the control of a process which involves the action normally of two or more individuals. It should state who (responsibility), what (action required), how (method or technique), when (time or frequency) and where (location or environment), as relevant.

In developing procedures, careful consideration should be given to the Purpose (i.e. what the procedure is for) and the Scope (i.e. what the procedure applies to). The purpose should be aligned to the objectives of the organistion.

Procedures can be prepared in the form of written text, flowcharts or both, however it is essential the responsibilities and activities to be conducted are clearly defined.

3.4.3 Work Instructions

A work instruction may appear in many different forms. Its purpose is to instruct on how to carry out a particular task. Work instructions may be a checklist, an engineering maintenance schedule, desktop computer operating instructions and so on.

3.4.4 Documentation

Relates to all the forms, documents, records, labels, tickets, job cards, purchase orders, goods inwards notes, registers, logs, etc. that are used to support the levels above.

3.5 CONCLUSION

Conclusion is very important in every project. It concludes all aspects and elements of the project also recognize as summary. This also knows whether the objectives and scopes had been achieved or not. The whole project included the establishment of quality manual and operating procedures for Automotive Excellence center in UMP. The flow of project methodology is shown in Figure 3.2.

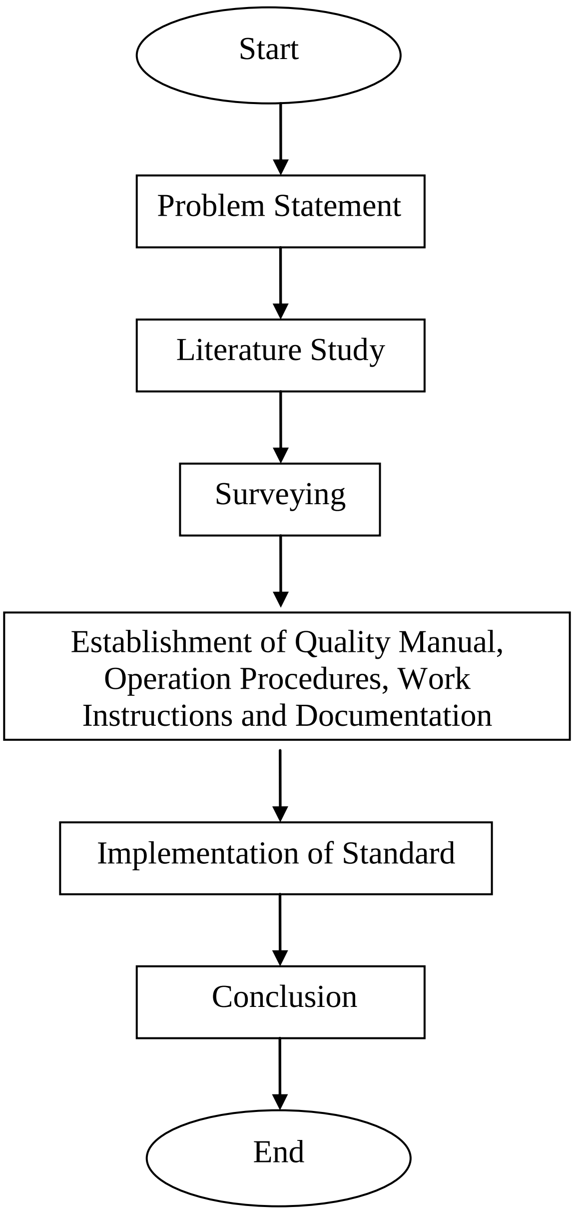

Figure 3.2: Flow chart of project methodology

CHAPTER 4

RESULT AND DISCUSSION

4.1 INTRODUCTION

In this chapter, it will results the establishment of quality manual and operation procedures that had been made from the surveying process from International Islamic University Malaysia (IIUM). The establishment of this quality manual and operation procedures for implementation of MS ISO 9001: 2008 quality management system are based on the literature review in chapter 2 and methodology in chapter 3.

Through out this chapter, can be observed that the implementation of MS ISO 9001: 2008 quality management system at AEC will provides a unique framework for AEC to establish a customer satisfaction oriented quality system that is internationally recognised and can be independently assessed and certified.

4.2 ESTABLISHMENT OF QUALITY MANUAL

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QUALITY MANUAL

Prepared By :-	**Approved By :-**
Signature :	Signature :
Name :	Name :
Position :	Position :
Date :	Date :

CONTROLLED COPY NO. :

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Table 4.1: ISO 9001:2008 Requirements for Automotive Excellence Center, UMP

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1.0 INFORMATION ABOUT THE ORGANIZATION

1.1 Brief Automotive Excellence Center History

The establishment of the UMP Automotive Excellence Center was started from the establishment of Automotive Focus Group, which was a center for automotive lecturers and staff from Faculty of Mechanical Engineering in Universiti Malaysia Pahang. At the early stage of its establishment, the Automotive Focus Group only involves activities such as official visits to universities and local and foreign automotive industries.

In year 2007, the Automotive Focus Group suggested for a center of automotive development to be established in Universiti Malaysia Pahang to allow extensive research and developments in the automotive field. In the 2007 Universiti Malaysia Pahang Senate Meeting, the proposal for the establishment of the center was approved. The center was known as the Automotive Development Center.In February 2008, the Automotive Development Center was officially changed to Automotive Excellence Center.

1.2 Objectives of the Automotive Excellence Center

The UMP Automotive Excellence Center is established to achieve the following objectives:

(i) To be recognized and Excellent Automotive Excellence Center in automotive research.
(ii) To establish networks and coorperation with other research institutions.

(iii)To produce professionals with high integrity and skills in automotive sector.

1.3 Vision

To be a world class Automotive Excellent Center (AEC)

1.4 Mission

We work hard to be well known Automotive Excellent Center (AEC) in national and global in term of knowledge, high integrity and competency by:

(i) Provide world class research equipment and facilities for automotive research.
(ii) Continuous research works
(iii)Collaboration with domestic and foreign research institutions and universities for automotive development and knowledge sharing.

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1.5 Organizational Structure

Organization structure

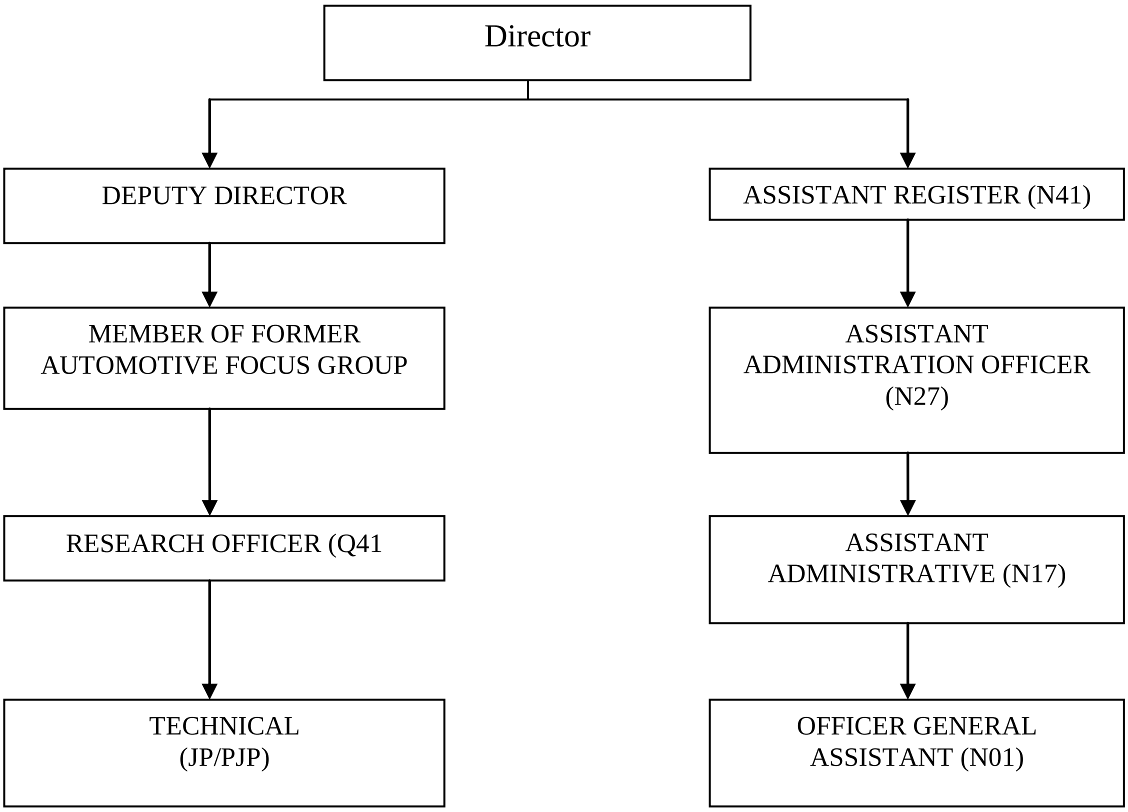

Figure 4.1: Organizational Structure of the Automotive Excellence Center, UMP

Source: Automotive Excellence Center, UMP 2009

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2.0 SCOPE

2.1 General

The AEC need to implemented the ISO 9001:2008 Standard in order to enhance customer satisfaction through the effective application of the system, including processes for continual improvement of the system and the assurance of conformity to customer and applicable regulatory requirements.

2.2 Application

The implementation scope of ISO 9001:2000 for AEC is as follows:

Decide on the scope of the quality system (administration, teaching / learning and research activities). Perform an initial gap analysis between the requirements of the standard and the existing quality system. Address possible synergies between accreditation and ISO 9000 documentation.

2.3 Exclusion of the Clauses

The clause of 7.5.2 (Validation of Processes for Production and Service Provision) is excluded under the provision of "AEC Research and development" since all processes are validated upon the verification.

3.0 REFERENCES

The AEC management system is implemented based on the followings:

(i) MS ISO 9001:2000 Standard Requirements

(ii) MS ISO 9004:2000 Guidelines for Performance Improvements

(iii)MS ISO 9000:2000 Fundamentals and Vocabulary

(iv)Policies from Ministry of Education

(v) University Rules and Regulations

(vi)University's Senate Decisions.

The system also takes into consideration any changes or amendments made to the above references.

4.0 QUALITY MANAGEMENT SYSTEM

4.1 General requirements

AEC need to established, documented, implemented and maintained a quality management system and continually improved its effectiveness in accordance with the requirements of ISO 9001:2008 Standard in the provision of "Research and Development".

The "Research and Development" process for AEC consists of course, researching evaluation, monitoring of staff performance, and other technical activities that relate to "Research and Development".

In order to ensure that the quality management system is effective, the AEC need to determine the interaction between the processes involved in the implementation of a quality management system in the "Research and Development".

There is no outsourcing of any process or activity in "Research and Development" within the quality management system adopted except for the maintenance and cleanliness of the building which are run by the appointed contractors.

4.2 Documentation Requirements

4.2.1 General

The quality management system documentation consists of the followings:

(i) Quality Manual including 6 Mandatory Procedures

(ii) Quality System Procedures and Records which are related to the Quality Management System implementation

(iii) Work Instructions

(iv) Supporting Documents including Records such as AEC Rules and Regulations, Forms, Checklists, Circulars, Notices etc.

4.2.2 Quality Manual

The Quality Manual consists of:

(i) Brief information about AEC, its objectives, vision and mission.

(ii) Quality Policy, Quality Objectives and AEC Quality Management System.

(iii) Explanation about the guiding principles of AEC based on ISO 9001:2008 standard requirements in “Research and Development”.

The objectives of the Quality Manual are:

(i) To explain AEC’s policy in handling the services of “Research and Development”.

(ii) To outline the procedures and fulfill the objectives of quality system for Research and Development services in line with the implementation of ISO 9001:2008.

4.2.3 Control of Document

All new quality documents must be reviewed and approved by the respective authority prior to the issuance. Quality Manual shall be prepared by the Director of Centre for Academic Quality Assurance and Development (CAQAD) with the consultation and assistance from AEC and must be approved by the Deputy Rector (Academic and Research) as a Management Representative. Quality System Procedures of AEC must be prepared and reviewed by the respective officers of AEC and approved by the Directors.

To prevent unauthorized changes to the Quality Manual and Quality System Procedures, any changes required need to be prepared through the form of "Request for Change of Procedure"**.** Any request for changes shall be channeled to the Centre for Academic Quality Assurance and Development (CAQAD). If there are major changes in the procedures, CAQAD will call for a meeting/discussion the director of AEC chaired by the Deputy Rector (Academic and Research) for review and re-approval.

All changes in master/original Quality Manual, Quality System Procedures and Work Instructions shall be stamped "obsolete" and kept by the Document Controller/Officer of the Centre for Academic Quality Assurance and Development (CAQAD).

Only quality documents that are appeared in the CAQAD website can be used and referred by AEC. The Quality Manual and Quality System Procedures distributed to AEC must be listed in the "Distribution List" form by the Document Controller of CAQAD (in which all information will be informed through the e-mail of www.aec.ump.edu.my) .The distribution of the Quality Manual and Quality System Procedures at AEC level should be monitored by the Document Controller of AEC.

The documents that need to be controlled shall also include any external documents (i.e. government circulars, etc.) and other internal documents (i.e. policy, regulation, etc.) determined by AEC to be necessary for the planning and operation that relate to the quality management system implementation.

The CAQAD must ensure that the soft-copy of the procedures in “Research and Development” is properly kept and only the revised version is released to the process owners.

Related Documentation

(i) Control of Documents (Procedure 4.2.3)

4.2.4 Control of Records

Records established in the system in order to provide evidence of conformity to the requirements and of the effective operation of the quality management system shall be controlled.

Within AEC, the majority of records apart from the Quality Manual, Quality System Procedures, and Work Instructions will be related to personnel records, personnel work and research related materials (e.g. research file, research outline, researcher outcomes, etc.).

Records, either that associated with quality system or those which are associated with the achievement of the desired quality of services (i.e. work performance) need to be identified, collected, indexed, filed, stored, maintained and disposed of in accordance with documented procedures. These records must be kept safely in a systematic order for easy reference and retrieval, whenever needed.

Specific controls are implemented to maintain the security and confidentiality of all student records and other confidential records. All identified records are subjected to a specific agreed retention period. Retention period is specified in each procedure. For records that are stored in electronic devices/format, password and access limitations must be implemented to maintain security and confidentiality.

Related Documentation

(i) Control of Records (Procedure 4.2.4)

7.0 PRODUCT REALIZATION

7.1 Planning of Product Realization

AEC shall plan and develop the processes needed for product/service realization in “Research and development”, as well as the quality objectives in order to determine the level of service achievement.

In order to ensure that all services provided have met customer satisfaction, AEC need to establish and documented the processes, and to provided resources specific to the service.

7.2 Customer-Related Processes

7.2.1 Determination of Requirements Related to the Product

AEC shall determine requirements specified by the customer, including the requirements for delivery and post-delivery activities, requirements not stated by the customer but necessary for specified or intended use, statutory and regulatory requirements related to the service given, and any additional requirements determined by the AEC.

International researchers who are offered to make a research at AEC will be required to obtain student pass from Malaysian Immigration Department through International Student Office, UMP.

7.2.2 Review of Requirements Related to the Product

AEC shall review the requirements related to the service given. The review will be conducted prior to the AEC's commitment to provide service to the customer and will ensure that the following requirements have been met by the customers.

(i) Researcher admitted into the AEC research and development programmes are subject to the entrance requirements set by the AEC. Upon receiving the applications of the candidates, Admissions and Records (A&R) will key in the information into the database. The information, then, is brought to the Researchers Admission Committee (RAC) and selection is done.

(ii) AEC reviews product related requirements per the customer drawing, order entry, and customer service procedures. These reviews are conducted prior to any commitment to supply a product to the customer and ensure that product requirements are defined, contract or order requirements differing form those previously expressed are resolved, and AEC has the ability to meet the defined requirements. Records of the results of the review and actions arising from the review are maintained. Where the customer provides no documented statement of requirement, the customer requirements are confirmed before acceptance. Where product requirements are changed, AEC shall ensure that relevant documents are amended and that relevant personnel are made aware of the changed requirements.

7.2.3 Customer Communication

AEC shall determine and implement several communication tools for effective communication with customers in term of the followings:

(i) Brochures and Pamphlets.
(ii) Letters, Notices and Memos.
(iii) Customer Complaints/Suggestions.
(iv) Dialogue with Customer
(v) Website
(vi) E-Mail

Related Documentation

(i) Control of Documents (Procedure 4.2.3)
(ii) Control of Records (Procedure 4.2.4)
(iii) Customer Satisfaction (Procedure 8.2.1)
(iv) Control of Nonconforming Product (Procedure 8.2.3)

7.3 Design and Development

7.3.1 Design and Development Planning

AEC shall plan and control the design and development of curriculum and programme structure.

During the design and development planning of curriculum and programme structure, AEC shall determine the following procedures:

(i) the design and development stages
(ii) the review, verification and validation that are appropriate to each design and development stage
(iii) the responsibilities and authorities for design and development

AEC shall manage the interfaces between different groups involved in design and development to ensure effective communication and clear assignment of responsibility.

Planning output shall be updated, as appropriate, as the design and development progress.

Related Documentation

(i) Guidelines on New Programme Planning and Programme Accreditation

7.3.2 Design and Development Inputs

Inputs related to service requirements shall be determined and related records will be maintained.

The inputs include the followings:

(i) Functional and performance requirements.

(ii) Applicable statutory and regulatory requirements (i.e. Policies from Ministry of Education, Senate Policies, University's Rules and Regulations etc.).

(iii)Other requirements essential for design and development of curriculum.

The inputs shall be reviewed for adequacy. Requirements shall be complete, unambiguous and not in conflict with each other.

Related Documentation

Guidelines on New Programme Planning and Programme Accreditation

7.3.3 Design and Development Outputs

The outputs of the design and development of curriculum and programme structure shall be in a form suitable for verification against the design and development input and shall be approved by the relevant parties prior to the release.

Design and development outputs must meet the following requirements:

(i) Meet the input requirements for design and development.
(ii) Provide appropriate information and service provision.
(iii) Contain service acceptance criteria.
(iv) Specify the characteristics of the service that is essential for proper use.

Related Documentation

(i) Guidelines on New Programme Planning, and Programme Accreditation

7.3.4 Design and Development Review

In order to meet the suitability of the current changes, the Curriculumt Review Committee (CRC) of the AEC shall review the design and development of their curriculum and programme structure whenever necessary.

This review is to be carried out in order to:

(i) evaluate the ability of the effectiveness of the course design and development process, and
(ii) identify any problems and propose remedial actions.

The Committee for the Curriculum Review at the AEC consists of:

(i) Dean
(ii) Deputy Dean (Academic Affairs)
(iii)Heads of Department
(iv)Experts from Outside

Related Documentation

(i) Academic/Curriculum Review
(ii) Minutes of Meeting on the Curriculum Review
(iii)Guidelines on New Programme Planning and Programme Accreditation

7.3.5 Design and Development Verification

Whenever needed, the Curriculum Review Committee shall verify that the design and development outputs have met the design and development input requirements.

Related Documentation

(i) Academic/Curriculum Review
(ii) Guidelines on New Programme Planning and Programme Accreditation.

7.3.6 Design and Development Validation

Wherever practicable, the design and development validation shall be performed to ensure that the curriculum and programme structure designed are capable of meeting the requirements.

Related Documentation

(i) Academic/Curriculum Review
(ii) Guidelines on New Programme Planning and Programme Accreditation.

7.3.7 Control of Design and Development Changes

Design and development changes of AEC curriculum, programme structure and shall be identified and the records shall be maintained. Any changes on the curriculum, and programme structure will be reviewed, verified and validated, as appropriate, and approved before implementation.

Related Documentation

(i) Academic/Curriculum Review
(ii) Guidelines on New Programme Planning and Programme Accreditation

7.4 Purchasing

7.4.1 Purchasing Process

AEC shall ensure that purchased product/service conforms to specified purchase requirements. AEC need to implement procedures for the purchasing of products/services from approved sources for the AEC.

Product

The Finance Division is responsible for all financial payments to all staff, suppliers, vendors and contractors. Whenever the AEC needs to buy the equipment, the process can be referred to the procedure on procurement.

A list of approved vendors/suppliers is available at the Finance Division. A procedure is in place to add or remove any vendor/supplier from the list.

To appoint a new supplier, the Finance Division looks intone or more of the following criteria:

(i) Background
(ii) Experience
(iii)Price
(iv)Length of Service
(v) Product
(vi)Reliability
(vii) Delivery

A procedure is needed to ensure that AEC has a system to identify, select and appoint a supplier for the products in place.

For the suppliers, the Finance Division will appraise their performances biannually. Active suppliers are those who have frequent contacts with the University and those who have supplied products at least once every year.

Services (part-time expertise)

The AEC is responsible for the selection and appointment of outside part-time expertise when needed. The appointment of part-time expertise will be determined by the Heads of Department of the AEC and approved by the Dean. The appointment will depend on the needs of the areas of specialization.

To appoint a part-time lecturer, the AEC will look into the following criteria:

(i) Experience
(ii) Length of Service
(iii) Reliability
(iv) Accountability
(v) Academic Qualification

A procedure is needed to ensure that AEC has a system to identify, select and appoint a part-time expertise for the services in place.

The AEC department head monitors and appraises the performance of the part-time expertise for every year. Active part-time expertises are those who have frequent contacts with AEC and those who have supplied services at least once every semester.

Related Documentation

(i) Procurement Process
(ii) Appointment of Part-Time Expertise
(iii) Evaluation (by staff and companies)

7.4.2 Purchasing Information

Purchasing information shall describe the product/service to be purchased. Any purchase order must refer to the following documents:

(i) Manual of AEC Purchasing Policies and Procedures
(ii) Manual of Financial Policies and Procedures
(iii) Relevant Treasury Circulars pertaining to Procurement

Related Documentation

(i) Procurement Process
(ii) Appointment of Part-Time Lecturers
(iii) Listing of Company Database
(iv) Evaluation (by students and companies)

7.4.3 Verification of Purchased Product

When goods/services are delivered by suppliers, the Assistant Director or authorized personnel of AEC respective must verify the goods/services either by certifying the delivery order or by issuing any documents as proof of verification.

When goods received do not meet requirement, goods are to be returned to vendor. Remarks should be made on delivery order specifying the non-compliance to the requirement and to request from vendor for replacement of non-conformance goods. The authorized personnel is to write to Purchasing Manager of Finance Division if replacement is not received within the specified time.

The mechanism adopted by the Faculty of Mechanical Engineering in controlling the purchasing activities is as follows:

(i) Filling up the Form.
(ii) Getting the approval from Heads of Department.
(iii) The selection of suppliers/vendors will be done by the Quotation Evaluation Committee.

Evaluation of suppliers is done biannually through evaluation assessment forms which are to be filled in by AEC and must be submitted to the Finance Division for analysis.

The evaluation on the performance of the part-time expertise will be done through the Researching Evaluation Rating.

Related Documentation

(i) Procurement Process
(ii) Appointment of Part-Time Lecturers
(iii) Listing of Company Database
(iv) Evaluation (by students and companies)

7.5 Production and Service Provision

7.5.1 Control of Production and Service Provision

For the purpose of quality system, the controlled process involves AEC areas that directly affect the research and development. As such, control measures have been implemented in the following key areas:

(i) Scheduling
(ii) Research Evaluation
(iii) Continuous Assessment
(iv) Internal or External Supervisor/Examiner
(v) Laboratory Environment

Scheduling

AEC scheduling for the following semester will be done before the mid-term of the current semester. FKM will come up with the master schedule which consists of AEC course code, course title, number of credit hours assigned, number of student registered, class location/venue and name of the Instructor Engineers. The master schedule will be distributed to all currently registered students before the final examination of the current semester.

Research Evaluation

To ensure that the curriculum is delivered in the manner specified in the AEC course outlines and research outcomes, specific procedures have been implemented which monitor and control tasks performed throughout phases of curriculum delivery.

The system is implemented to monitor the researchers in AEC performance by means of Researching Evaluation Rating (RER) whereby every researcher will be evaluated by the head of AEC at the end of the semester.

The RER allows AEC to measure the performance of the researcher and the applicability of the research against the set objectives, policies and outcomes as specified in the relevant quality programmes. If failures are found after the assessment, systems and controls are implemented to diagnose the causes and recommend the appropriate corrective action.

<u>Continuous Assessment</u>

A complete and thorough assessment scheme shall be establish. Set procedures are in place to ensure that the process of assessment is carried out correctly and fairly.

The Instructor Engineer is responsible for the initial assessment of the research and development work. The assessment by the Instructor Engineer is reviewed by the Head of the AEC to ensure fairness in grading. All assessment is done using the approved predefined values found in the programme outline.

<u>Internal or External Supervisor/Examiner</u>

AEC shall recommend the appointment of a supervisor for full-time researcher. The supervisor is responsible to assist researcher in preparing their research plan based on the background and the present standing of the researcher. The supervisor is also responsible to advise the reseracher in preparation of the comprehensive examination (if relevant), and to supervise and guide them in the process of proposing and preparing their research work.

Laboratory Environment

The AEC places equal emphasis on the learning conditions/environment to ensure a comfortable learning atmosphere. AEC is equipped with important machines and tools for technical practice purpose. There are a computer laboratory which is equipped with computers, LCDs and Overhead Projectors. The computer laboratory is also equipped with centralized air-conditioner system from 7.30 a.m. until 7.00 p.m. The research environment is continuously maintained to ensure that all facilities are in proper working condition for safe and comfortable research. The Development Division is responsible for ensuring that the learning environment is always in good working condition.

Related Documentation

(i) Analysis of Student Performances
(ii) Teaching Evaluation Rating
(iii) Maintenance of Teaching Equipment
(iv) Maintenance of Physical Facilities

7.5.2 Validation of Processes for Production and Service Provision

The clause of 7.5.2 (Validation of Processes for Production and Service Provision) is excluded since in "Teaching and Learning", the processes for the service provision is validated upon the verification.

7.5.3 Identification and Traceability

Where appropriate, AEC shall identify the product by suitable means throughout product realization.

AEC shall identify the product status with respect to monitoring and measurement requirements throughout product realization.

Where traceability is a requirement, AEC shall control the unique identification of the product and maintain records

Related Document

(i) Control of Records (Procedure 4.2.4)

7.5.4 Customer Property

AEC shall exercise care with customer property while it is under AEC's control or being used by AEC. AEC shall identify, verify, protect and safeguard customer property provided for use or incorporation into the product. If any customer property is lost, damaged or otherwise found to be unsuitable for use, AEC shall report this to the customer and maintain records.

Related Document

(ii) Control of Records (Procedure 4.2.4)

7.5.5 Preservation of Product

AEC shall preserve the conformity of product during internal processing and delivery to the intended destination. This preservation shall include identification, handling, packaging, storage and protection. Preservation shall also apply to the constituent parts of a product. The exact method of handling, storage, packaging, preservation (and other special requirements) and delivery for each product is defined in the relevant process documentation.

The Admissions and Records (A&R) Division's Office is responsible for the handling, storage and preservation of researcher records (i.e. Researcher Personal Files), and AEC are responsible for the handling, storage, and preservation of researcher project papers and works, and packaging the product. The administration of AEC is responsible for handling the office supplies, equipment and other facilities of the AEC.

AEC is to abide by a set of criteria and policy that governs the specific methods of handling, storage, packaging and preservation.

Handling

All products are handled from receiving to delivery, by methods that effectively prevent any damage or deterioration in accordance with written procedures. Process equipment, i.e. cranes or forklifts and other special product handling tools, are regularly inspected and maintained to prevent any product damage.

. All researcher project papers or works will be handled by the Instructor Engineer of AEC. Where necessary, specific instructions are prepared and implemented for the safety and effective handling of office equipment such as computers, software, telephone systems, etc.

Storage

Product is stored in designated areas with proper access and environmental controls to prevent loss and deterioration for all materials and product. The receiving and the dispatch of product are controlled by process documentation. Storage areas must clearly separate materials and product by process use and status. Product in long-term storage, or perishable product, is regularly assessed and/or tested for deterioration. Special procedures are developed for any hazardous or high value materials and product.

7.6 Control of Monitoring and Measuring Equipment

AEC shall determine the monitoring and measurement to be undertaken and the monitoring and measuring equipments needed to provide evidence of conformity of product to determined requirements.

AEC shall establish processes to ensure that monitoring and measurement can be carried out and are carried out in a manner that is consistent with the monitoring and measurement requirements.

Where necessary to ensure valid results, measuring equipment shall:

(i) Be calibrated or verified, or both at specified intervals, or prior to use, against measurement standards traceable to international or national measurement standards; where no such standards exist, the basis used for calibration or verification shall be recorded.
(ii) Be adjusted or re-adjusted as necessary.
(iii) Have identification in order to determine its calibration status.
(iv) Be safeguarded from adjustments that would invalidate the measurement result.
(v) Be protected from damage and deterioration during handling, maintenance and storage.

In addition, management shall assess and record the validity of the previous measuring results when the equipment is found not to conform to requirements. Management shall take appropriate action on the equipment and any product affected.

Records of the results of calibration and verification shall be maintained.

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8.1 General

AEC shall plan and implement the monitoring, measurement, analysis and improvement processes needed for the effectiveness of the quality management system by applying the following methods:

(i) to demonstrate conformity to the services given,
(ii) to ensure conformity of the quality management system, and
(iii) to continually improve the effectiveness of the quality management system.

8.2 Monitoring and Measurement

8.2.1 Customer Satisfaction

In order to meet customer requirements, AEC shall establish the following methods:

(i) Complaint/Suggestion Form
(ii) Dialogue and Discussion
(iii) Survey

Monitoring customer perception can include obtaining input from sources such as customer satisfaction surveys, customer data on delivered product quality, user opinion surveys, compliments, warranty claims and dealer reports.

8.2.2 Internal Audit

Internal Audit is conducted in order to determine whether the quality management system of AEC conforms to the planned arrangements, to the ISO 9001:2008 standard and to the quality management system requirements established by AEC. It is also to ensure that the quality management system adopted is effectively implemented and maintained.

The Management Representative (MR) and the CAQAD are responsible for planning and controlling the internal audit programme. The qualified auditors are given audit responsibilities in areas over which they have no direct responsibility. This integrated activity should be handled and coordinated by the CAQAD.

The Internal Auditors are appointed by the Vice Chancellor of the UMP which comprise the staff from AEC or any external party which is competent in understanding of the ISO 9000 requirements and the activities carried out by the AEC.

The Internal Audit Team is to plan and prepare audit reports and carry out audits in accordance to the documented audit procedures. Any audit findings and recommendations for corrective action need to be submitted in writing to the Director of AEC who will be responsible to ensure that the respective personnel correct the deficiencies revealed in the audit. The personnel responsible for the functions being audited must be given a chance to review, agree and finally correct any deficiency revealed within the time frame specified by the Internal Auditor. The auditor shall also do a follow-up to verify compliance with the corrective action requests.

The results of the quality audits are brought to the attention of the Management Representative and also serve as an input for the Management Review Meeting.

The frequency of audits is planned on the basis of the status and importance of the activities to be verified. Audits by the Internal Auditors include the following evaluations:

(i) documentation and records
(ii) practices, procedures, system and work processes
(iii) capabilities of personnel
(iv) quality of services provided
(v) identification of potential improvement

Related Documentation

(i) Internal Audit (Procedure 8.2.2)

8.2.3 Monitoring and Measurement of Processes

The method used to monitor and implement the work processes in the quality management system is through the related documents. These documents are kept safely and can be referred to whenever necessary. When planned results are not achieved, any related personnel will take corrective and preventive action.

In order to monitor researcher performances, AEC must use Researching Evaluation technique whereby AEC will access the researchers. Heads of AEC will monitor the researcher's performances through regular Departmental Meetings.

The AEC must monitor the grading process through the following mechanisms:

(i) Answer Scheme

(ii) Programme Leader/Head of AEC Approval

(iii)Dean Approval

(iv)Senate Endorsement

Related Documentation

(i) Internal Audit (Procedure 8.2.2)

8.2.4 Monitoring and Measurement of Product

AEC shall monitor and measure the characteristics of the services given to verify that the service requirements in Research and Development have been met. It will be carried out in accordance with the stated processes listed in the Master-list of Quality System Procedures. Evidence of conformity with the acceptance criteria shall be maintained.

Records shall indicate the person(s) authorizing release of AEC research and development products.

The release product and delivery of service to the customer shall not proceed until the planned arrangements (procedure 7.1, Product Realization) have been satisfactory completed, unless otherwise approved by a relevant authority and, where applicable, by the customer.

8.3 Control of Nonconforming Product/Service

The University shall identified several areas where nonconforming practices/products/services should not be used by the AEC especially which is related to the research and development.

These non-conformances are as follows:

(i) Goods/Materials Non-Conformance (Wherever Applicable)

i. Non-conforming items (i.e. brochures, pamphlets, manuals, publicity materials, equipment, etc.) are identified immediately and action will be taken to prevent the use of these non-conforming items. Such items are to be returned to suppliers, disposed or sold to third parties in accordance with relevant operating procedures. Records are to be maintained to identify the non-conformance and the necessary action taken to provide input into relevant records.

(ii) Service Non-Conformance

Non-conformance in the provision of AEC services can be considered as one or more of the following:

i. Operational errors such as conflicts in schedules, discrepancies in the master schedule, wrong allocation of laboratory, faulty equipment etc.

ii. Inability to provide research and development opportunities to the course specification such as inadequate instructor engineer, tardiness of researchers, where researches outcomes are not met.

iii. Low performance of researchers (failure to obtain the required Weighted Average in RER score).

iv. Not enough expertise to teach the field.

AEC shall take specific controls for each of the above circumstances and is responsible to take action on any non-conformance occurred. The Executive Director/Director has to ensure that all such deficiencies are recorded, reviewed and corrected in the shortest possible time.

Related Documentation

(i) Control of records (Procedure 4.2.4)
(ii) Customer Satisfaction (Procedure 8.2.1)
(iii) Control of Non-Conforming Products/Services (Procedure 8.3)
(iv) Corrective Action (Procedure 8.5.2)
(v) Preventive Action (Procedure 8.5.3)

8.4 Analysis of Data

AEC shall determine, collect and analyze appropriate data to demonstrate the suitability and effectiveness of the quality management system and to evaluate where continual improvement of the effectiveness of the quality management system can be made.

The types of data are as follows:

(i) Statistics on Researches Performances
(ii) Customers' Complaints

(iii)Analysis of Survey being conducted

In line with the AEC's quality objective to produce professionals with high integrity and skills in automotive sector, AEC must incorporated the essence of change and continuity to adjust the existing system and process development through evaluation of researching service performance.

This researching evaluation report is done through the Researcher Evaluation Rating (RER) form which is completed by the head of AEC.

The analyzed results will be used as a reference for corrective and preventive action and improvement evaluation in Research and Development Services.

Evaluation of the performance of a staff member is carried out periodically in order to ensure the effectiveness of the system, to identify any irregularities and non-conformities and to determine necessary corrective action to prevent recurrence of problems.

Evaluation of researcher performance will be carried out through the following steps:

(i) Continuous Assessment (i.e. Project Papers).
(ii) The overall evaluation of researcher technical knowledge performance will be based on the above criteria.

Related Documentation

(i) Customer Complaints (Procedure 8.2.1)
(ii) Corrective Action (Procedure 8.5.2)

(iii)Preventive Action (Procedure 8.5.3)

8.5 Improvement

8.5.1 Continual Improvement

AEC must continually improve the effectiveness of the quality management system through the use of the quality policy, quality objectives, audit results, analysis of data, corrective and preventive actions and management review.

Related Documentation

(i) Management Review (Procedure 5.6)
(ii) Internal Audit (Procedure 8.2.2)
(iii)Corrective Action (Procedure 8.5.2)
(iv)Preventive Action (Procedure 8.5.3)

8.5.2 Corrective Action

AEC shall take action to eliminate the causes of nonconformities in order to prevent its recurrence.

Corrective actions taken on non-conformances cover the following criteria:

(i) Identify the problems.
(ii) Identify the reasons and causes.
(iii)Identify the solutions and corrective actions needed.

The effective corrective actions can be taken as a result of the followings:

(i) Internal Audit Exercise.
(ii) Complaints Received from Customer or Public.
(iii) Any Suggestion from Staff, Customer or Public.
(iv) Results of Investigation on the Effectiveness of the Quality Management System.

Related Documentation

(i) Internal Audit (Procedure 8.2.2)
(ii) Corrective Action (Procedure 8.5.2)

8.5.3 Preventive Action

AEC shall determine action to eliminate the causes of potential nonconformities in order to prevent their occurrence. Preventive actions taken on non-conformances cover the following criteria:

(i) Analyze the trend and determine its potential to occur.
(ii) Identify and determine the possible causes.
(iii) Identify and determine the preventive actions needed to prevent the problems from occurring in the future.

Preventive actions can be taken as a result of the followings:

(i) Internal Audit Exercise.
(ii) Any Suggestion from Staff, Customers or Public.

(iii)Results of Investigation on the Effectiveness of the Quality Management System.

Related Documentation

(i) Internal Audit (Procedure 8.2.2)

(ii) Control of Non-Conforming Products/Services (Procedure 8.3)

(iii)Preventive Action (Procedure 8.5.3)

4.3 ESTABLISHMENT OF OPERATION PROCEDURES

4.3.1 Control of Documents Procedure

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TITLE : CONTROL OF DOCUMENTS	DATE : 01/10/2009
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CONTROL OF DOCUMENTS

Prepared By :-	Approved By :-
Signature :	Signature :
Name :	Name :
Position :	Position :
Date :	Date :

CONTROLLED COPY NO. :

AUTOMOTIVE EXCELLENCE CENTER	VERSION NO : 00 REVISION NO : 00
TITLE : CONTROL OF DOCUMENTS	**DATE : 01/10/2009**
DOCUMENT NO. : PROCEDURE 4.2.3	**PAGE : 2/8**

1. OBJECTIVE

1.1 To establish the AEC's quality document control system.

1.2 To ensure that all quality documents are identified, reviewed, approved, issued, updated and distributed accordingly.

2. SCOPE

This procedure applies to the control of documents in the implementation of the quality management system which is the Quality Manual, Quality System Procedures, Work Instructions, and other internal or external documents that are related to rules and regulations.

3 DEFINITIONS

3.1	MR	:	Management Representative
3.2	DMR	:	Deputy Management Representative
3.3	CAQAD	:	Centre for Academic Quality Assurance and Development
3.4	DO/DC	:	Document Officer/Controller

4 REFERENCES

4.1 Quality Manual QM 4.0 (Control of Documents)

4.2 ISO 9001:2008 Standard Requirements (Clause 4.2.3)

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5 RESPONSIBILITIES AND DETAILED PROCEDURE

Table 4.2: Responsibilities and Detailed Procedure for Control of Documents

RESPONSIBILITY	DETAILED PROCEDURE
Director of CAQAD & DMR	Is fully responsible for the application and implementation of the procedure for document control.
DO/DC of AEC	Keep all documents issued. Quality Manual, Quality System Procedures and Work Instructions covered by the scope of this procedure shall be maintained and controlled by CAQAD. The latest version of the documented procedures must be put available in the CAQAD website.
Automotive Excellence Center	5.1 <u>Review New Documents and Approval Prior to Issue</u> 5.1.1 All new quality documents must be reviewed and approved by the respective authority prior to the issuance. (i) Quality Manual shall be prepared by the Director of CAQAD with the consultation and assistance AEC and must be approved by the MR (Deputy Rector, Academic & Research. (ii) Quality System Procedures (of the core processes in the Research and development) must be reviewed by the respective officers and approved by the MR (Deputy Rector, Academic & Research). (iii)Quality System Procedures (of the supporting and mandatory processes) must be reviewed by the CAQAD Officer and approved by the Director of CAQAD. (iv)Other Quality System Procedures issued by AEC must also be reviewed by the officer in-charge and approved by the FKM's Deans.

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Table 4.2: Continued

RESPONSIBILITY	DETAILED PROCEDURE
Automotive Excellence Center	(v)Work Instructions if applicable must be reviewed by the officers and approved by AEC Director. 5.2 <u>Issuing of New Quality System Procedures</u> 5.2.1 The originator, upon completion of the new written procedures shall submit to CAQAD (as a Secretariat) for further discussion. 5.2.2 CAQAD will bring to the meeting with MR and AEC Director prior to the approval.
DO/DC of CAQAD	5.2.3 Once approved by the MR, the DO/DC of the CAQAD shall prepare the documented procedures and put in the CAQAD Website.
Automotive Excellence Center	5.3 <u>Changes/Revision of Quality Manual and Quality System Procedures.</u> 5.3.1 To prevent unauthorized change to the Quality Manual and Quality System Procedures, any changes required need to be prepared through the form of "Request for Change of Procedure"**.** 5.3.2 Changes to procedures or documents can either be initiated by the person using them or the originator. 5.3.3 Any request for changes shall be channeled to the officers concerned and then submit to CAQAD for review and approval. (i) For minor changes, CAQAD will amend automatically. (ii) For major changes, CAQAD will bring to the meeting with AEC Director.

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Table 4.2: Continued

RESPONSIBILITY	DETAILED PROCEDURE
CAQAD	5.3.4 After the re-approval by the Deputy Rector (Academic & Research), CAQAD shall : 5.3.4.1 Make necessary amendment to the procedures. 5.3.4.2 Put the revised procedures in the CAQAD Websites. 5.3.4.3 Inform all AEC through e-mail. 5.3.5 The version no. will be changed when there are more than ten revisions in each quality system procedure or when there is a new version of ISO 9000 standard requirements is referred or when there is a change/extension in the scope of implementation. On the other hand, the revision no. will be changed when there is a change on each page of the procedure which will incorporate the change in the effective date
Automotive Excellence Center	5.4 Procedure for Standards and Regulations or External Documents 5.4.1 Documents originating from external sources need to be controlled by faculty. Document Controller at the AEC has to monitor the distribution of external documents. 5.4.2 Standards for ISO 9000 as applicable must be controlled by CAQAD.
Director or DO/DC of CAQAD	5.5 Document Distribution 5.5.1 The Director or DO/DC of CAQAD is responsible for the distribution of the Quality Manual and the Quality System Procedures. CAQAD has to ensure that the procedures appeared in the CAQAD website are the latest version.

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Table 4.2: Continued

RESPONSIBILITY	DETAILED PROCEDURE
Director or DO/DC of CAQAD	5.5.2 The Master List for Quality System Procedures, Work Instructions, Forms, External Documents and Internal Documents needs to be filed by the DO/DC of CAQAD. It is the responsibility of the DO/DC of CAQAD to maintain and update all Master Lists.
DO/DC of AEC	5.5.3 If there is a distribution of the hard-copy of the procedures, the list of documents holders or distribution list (i.e. Quality Manual and Quality System Procedures) needs to be filed in the following forms : (i) Quality Manual (ii) Quality System Procedures and Work Instructions (iii)Internal Documents (iv)External Documents The appointed Document Controller of AEC needs to file all the holders of the Quality Manual and Quality System Procedures by using the above forms.
CAQAD	5.6 Documents/Records and Retention All changes in master/original Quality Manual, Quality System Procedures and Work Instructions shall be stamped “obsolete” and kept by the Document Controller/Officer of CAQAD.
Automotive Excellence Center	5.7 Form All forms that are generated within the quality system and listed as Quality Records shall be controlled by the authorized person of AEC.
Automotive Excellence Center	5.7.1 Generation of New Forms 5.7.1.1 AEC may generate new forms at the discretion of the Dean/Director.

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Table 4.2: Continued

RESPONSIBILITY	DETAILED PROCEDURE
Automotive Excellence Center	5.7.1.2 The Dean/Director of faculty will be responsible to inform all parties concerned about the issuance of the new form and its effective date. The recipients need to acknowledge receipt.
Automotive Excellence Center	5.7.2 Revision of the Forms 5.7.2.1 Any authorized person within the AEC concerned may request for a change in a form. 5.7.2.2 Prior approval for any revision to a form must be obtained from the AEC Director. 5.7.2.3 Such revision must be documented in the upper right hand corner of the revised form. 5.7.2.4 All revised forms must have the following :- (i) Revision Number. (ii) Issue/Version Number. (iii)Revision Date. (iv)Division Initials The above criteria must be printed in the upper right hand corner of the revised forms. 5.7.2.5 It is the responsibility of AEC or as assigned by the Director to collect and discard all obsolete forms prior to the use of the new forms, and distribute a new form accordingly.

6.0 QUALITY RECORD

Table 4.3: Quality Record for Control of Documents

NO	RECORDS	LOCATION	RETENTION PERIOD	RESPONSIBILITY
1	Request for Change of Procedures	Filing Cabinet	One Years	Administrative Assistant
2	Distribution List	Filing Cabinet	Five Years	Administrative Assistant
3	Master List for Quality System Procedures	Filing Cabinet	Five Years	Administrative Assistant
4	Master List for Work Instructions	Filing Cabinet	Five Years	Administrative Assistant
5	Master List for External Documents	Filing Cabinet	Five Years	Administrative Assistant
6	Master List for Internal Documents	Filing Cabinet	Five Years	Administrative Assistant
7	Master List for Forms	Filing Cabinet	Five Years	Administrative Assistant

4.3.2 Control of Records Procedure

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CONTROL OF RECORDS

Prepared By :-	Approved By :-
Signature :	Signature :
Name :	Name :
Position :	Position :
Date :	Date :

CONTROLLED COPY NO. :

AUTOMOTIVE EXCELLENCE CENTER	VERSION NO : 00 REVISION NO : 00
TITLE : CONTROL OF RECORDS	**DATE : 01/10/2009**
DOCUMENT NO. : PROCEDURE 4.2.4	**PAGE : 2/5**

1. OBJECTIVE

This procedure is established to provide the requirements for the effective operation of the quality management system governing the records. This shall include how records are identified, stored, protected, retrieved, and disposed. The retention must also be considered on certain records within the AEC operation of Quality Management System.

2. SCOPE

This procedure applies to records identified in the implementing documents, and it is to describe the system for retaining the records essential to demonstrating the successful operation of AEC's quality system.

3. DEFINITION

3.1 Record : Records as identified in the procedures
3.2 MR : Management Representative
3.3 DMR : Deputy Management Representative
3.4 DD : Deputy Director of AEC
3.5 AD : Assistant Director of AEC
3.6 EO : Executive Officer of the AEC

4. REFERENCES

4.1 Quality Manual QM 4.0 (Control of Records)
4.2 ISO 9001:2008 Standard (Clause 4.2.4)

5. RESPONSIBILITIES AND DETAILED PROCEDURE

Table 4.4: Responsibilities and Detailed Procedure for Control of Records

RESPONSIBILITY	DETAILED PROCEDURE
MR & DMR	5.1 Is responsible for the application and implementation of this procedure, and discuss or review it in the Management Review Meeting.
DD/AD/EO	5.2 <u>Identification</u> Records shall be appropriately identified by a descriptive title clearly labeling the record. All records shall be assigned a title and reference number to distinguish it from other faculty record.
DD/AD/EO	5.3 <u>Storage</u> The records shall be kept by AEC monitored by authorized personnel. The records shall be kept in the office cabinets as well as database system or computer diskettes. (i) General Files will be stored in the filing cabinets at the general filing room. (ii) Staff Personnel Files will be kept in the special filing cabinets/safe cabinets at the general filing room. (iii)Confidential Files will be kept in the safe filing cabinets.
DD/AD/EO	5.4 <u>Protection</u> All records shall be filed and stored in the office cabinets to prevent damage, deterioration or loss. Those records that are kept in the database system or computer diskettes shall be kept in the appropriate places to prevent damage or loss. The records that are stored in electronic database system can only be assessed by password of authorized personnel to maintain its confidentiality.

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Table 4.4: Continued

RESPONSIBILITY	DETAILED PROCEDURE
DD/AD/EO	5.5 Retrieval The person who requires the information contained in the record from AEC shall seek permission from the authorized personnel and Director AEC for approval. All records shall be properly labeled and indexed/numbered for easy retrieval.
DD/AD/EO	5.6 Retention The retention must be considered on certain records within AEC operation of the Quality Management System. The retention depends on the importance of the usage of the records by AEC. The retention is specified/stated in each quality system procedure.
DD/AD/EO	5.7 Record Disposal Records shall be disposed when the retention time has been exceeded. The decision on the records disposal depends AEC. Those records shall be shredded and disposed off in an environmentally responsible manner.
DD/AD/EO	5.8 Legibility The records must be typed or neatly hand written. The records are also records that are available in terms of softcopy (i.e. database system, diskette, compact disk, etc.)

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6. QUALITY RECORDS

Refer to all records that have been stated in each Quality System Procedure.

7. FLOW CHART

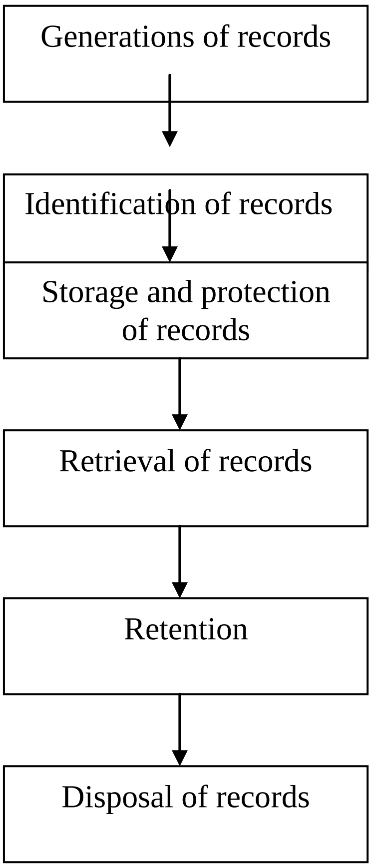

Figure 4.2: Detailed Procedure for Control of Records

4.3.3 Customer Satisfaction Procedure

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CUSTOMER SATISFACTION

Prepared By :-	**Approved By :-**
Signature :	Signature :
Name :	Name :
Position :	Position :
Date :	Date :

CONTROLLED COPY NO. :

AUTOMOTIVE EXCELLENCE CENTER	VERSION NO : 00 REVISION NO : 00
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8. OBJECTIVE

This procedure is prepared to ensure that customer complaints pertaining to AEC Research and Development will be managed effectively and efficiently to meet the satisfaction of the customers.

9. SCOPE

This procedure applies to all customer complaints (verbal and written) which are related to AEC Research and Development.

10. DEFINITIONS/ABBREVIATIONS

Definitions

3.1	Customers	: Researchers and Publics.
3.2	Complaints	: Dissatisfaction towards services given by the AEC and staff.
3.3	Verbal Complaint	: Complaint received through telephone, direct from top management, informal discussion or received in person.
3.4	Written Complaint	: Complaint received through official letter, facsimile, e-mail, suggestion box, newspaper, etc.

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Abbreviations

3.5	HOD	:	Head of Department.
3.6	DD	:	Deputy Director of AEC
3.7	AD	:	Assistant Director of AEC
3.8	EO	:	Executive Officer of AEC
3.9	AA	:	Administrative Assistant
3.10	CQC	:	Council of Quality Culture
3.11	MRM	:	Management Review Meeting
3.12	CAQAD	:	Quality Assurance Unit

11. REFERENCES

4.1 Quality Manual QM 5.0 (Customer Focus)

4.2 Procedure on Management Review Meeting

4.3 Procedure on Corrective Action.

4.4 Procedure on Preventive Action.

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12. RESPONSIBILITIES AND DETAILED PROCEDURE

Table 4.5: Responsibilities and Detailed Procedure for Customer Satisfaction

RESPONSIBILITY	DETAILED PROCEDURE	
AA of AEC	5.1	<u>Written complaint</u> Receive complaints from the customers through official letters, facsimile, e-mail, newspaper, or complaint form, and stamp with the date of receipt. <u>Verbal Complaint</u> Receive complaint and record information in the Complaint.
	5.2	Compile the complaint in the Customer Complaint File and forward it to DD/AD/EO or officer in-charge of complaints.
DD/AD/EO of AEC	5.3	Receive Customer Complaint File from AA.
	5.4	Identify the types of the complaint (i.e. complaint which action can be taken immediately or one that needs further discussion).
	5.5	If the complaint can be resolved immediately, send a letter signed by DD/AD/EO or officer in-charge of complaints informing the customer. For Verbal Complaint, inform the customer through telephone.
	5.6	If the complaint requires further discussion, forward it to the HOD.
HOD	5.7	Check all the information on the complaint received (written complaint or verbal complaint), and to take action within 14 days of receipt.
	5.8	If the complaint can be solved at HOD level, request DD/AD/EO to proceed for the corrective action suggested.

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Table 4.5: Continued

RESPONSIBILITY	DETAILED PROCEDURE
HOD	5.9 If the complaint cannot be solved, request DD/AD/EO or officer in-charge of complaints to call for a discussion between HOD, DD, AD and EO. 5.10 If necessary, request DD/AD/EO or officer in-charge of complaints to collect and compile all relevant information related to the complaint received to be brought for a discussion.
HOD/DD/ AD/EO	5.11 During the discussion: 5.11.1 Analyze the complaint and identify the root cause of the problem. 5.11.2 Decide on the corrective and preventive actions.
Dean	5.12 Instruct DD/AD/EO or officer in-charge of complaints to write a letter to the customer on the status of the complaint and inform the customer on whether : 5.12.1 Any corrective action has been taken by the AEC; or 5.12.2 Any action to solve the problem is still in progress or still under consideration or it has been forwarded to the University's Higher Authorities for further action.
DD/AD/EO of AEC	5.13 Prepare the reports on the results of the corrective and preventive actions taken (or state all corrective actions taken by addressing in the complaint forms if the complaints were received through the forms).
AA DD/AD/EO or officer in-charge of complaints	5.14 Make copy of the reports for filing purposes. 5.15 Prepare the statistics and summary of the complaints received every year prior to the Management Review Meeting.

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Table 4.5: Continued

RESPONSIBILITY	DETAILED PROCEDURE
Dean	5.16 Table the reports in the MRM.
MRM Members	5.17 Review the reports on the corrective and preventive actions as well as improvement efforts for further implementation (if necessary).
Chairman of MRM	5.18 If necessary, request the MR or DMR to ensure that corrective and preventive actions, and make an improvement efforts are well- implemented by AEC.

6 QUALITY RECORDS

Table 4.6: Quality Record for Customer Satisfaction

NO	RECORDS	LOCATION	RETENTION	RESPONSIBILITY
1	Completed Complaint Forms	Filing Cabinet	Five Years	Administrative Assistant
2	Statistics/Summary of Customer Complaints Received	Filing Cabinet	Five Years	Administrative Assistant
3	Letters Received Pertaining to Customer Complaints	Filing Cabinet	Five Years	Administrative Assistant

4.3.4 Internal Audit Procedure

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INTERNAL AUDIT

Prepared By :-	Approved By :-
Signature :	Signature :
Name :	Name :
Position :	Position :
Date :	Date :

CONTROLLED COPY NO. :

AUTOMOTIVE EXCELLENCE CENTER	VERSION NO : 00 REVISION NO : 00
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13. OBJECTIVE

The objective of the Internal Audit is to determine whether the quality management system conforms to the planned arrangements, and is effectively implemented and maintained.

14. SCOPE

This procedure shall be followed by all appointed auditors involved in the internal audit exercise.

15. DEFINITION

3.1	AEC	:	Automotive Excellence Center.
3.2	IA	:	Internal Audit.
3.3	NCR	:	Non-Compliance/Non-Conformance Report (item/service which does not satisfy the requirement of the documented Quality Management System).
3.4	MR	:	Management Representative.
3.5	DMR	:	Deputy Management Representative
3.6	CAQAD	:	Centre for Academic Quality Assurance and Development
3.7	Auditees	:	The relevant persons or departments to be audited

16. REFERENCES

4.1 Quality Manual QM 8.0 (Internal Audit).

4.2 ISO 9001:2008 Standard Requirements (Clause 8.2.2).

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4.3 Corrective Action (PROCEDURE 8.5.2).

17. RESPONSIBILITIES AND DETAILED PROCEDURE

Table 4.7: Responsibilities and Detailed Procedure for Internal Audit

RESPONSIBILITY	DETAILED PROCEDURE
IA Team	5.1 Consist of members who have the criteria as follows: (i) Completed the Internal Audit Training. (ii) Have knowledge and understand the ISO9000 Standard Requirements. (iii)Have knowledge in the activities/processes being audited. 5.2 The frequency for Internal Audit shall be conducted every twelve (12) months or based on the implemented needs and criteria of the area being audited.
CAQAD	5.3 Submit the list of the auditors' names together with the appointment letters to the Rector for approval. 5.4 Send the appointment letters that are already signed by the Rector to the appointed Internal Auditors. 5.5 Prepare the IA programme/timetable which shall specify the time, the responsible auditors, the activities/processes to be audited, and the targeted area in AEC to be audited.
IA Team	5.6 Plan, prepare reports and carry out audits in accordance with the documented audit procedures.
Lead Auditor	5.7 Be responsible to assign each auditor to specific quality system clauses or the University's activities to be audited. He/she plans each audit to ensure the following : 5.7.1 Each audit is undertaken by an auditor independent of the activity being audited.

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Table 4.7: Continued

RESPONSIBILITY	DETAILED PROCEDURE
Lead Auditor	5.7.2 Audit is conducted in accordance to the planned schedule and scope. 5.7.3 Audit programme/timetable, job distribution among audit team members, Audit Notes, Internal Audit (IA) Report Form **(Appendix 1)**, Non Compliance/Non Conformance Report (NCR) Form **(Appendix 2)**, Observation Form **(Appendix 3)** and Checklist Form (wherever necessary) must be available before the execution of the audit.
Lead Auditor	5.8 The Execution of the Audit is as follows: 5.8.1 Open Meeting 5.8.1.1 Introduce audit team members to the auditees' Executive Directors/Directors.
IA Team and Auditees	5.8.1.2 Briefing from the auditees' Executive Directors/Directors to the audit team members on the activities. 5.8.1.3 Review scope and objective of the audit. 5.8.1.4 Briefing on the methods and procedures to conduct the audit. 5.8.1.5 Establish official communication links between audit team and auditees. 5.8.1.6 Confirm the resources and facilities needed by the audit team are available. 5.8.1.7 Confirm date/time for the closing and any interim meetings. 5.8.1.8 Clarify any unclear details of the audit plan.

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TITLE : INTERNAL AUDIT	DATE : 01/10/2009
DOCUMENT NO. : PROCEDURE 8.2.2	PAGE : 5/7

Table 4.7: Continued

RESPONSIBILITY	DETAILED PROCEDURE
IA Team	5.8.2 Audit Execution (During the Audit Exercise) 5.8.2.1 Collecting evidence shall be based on the followings :- (i) Evidence based on the ISO 9000 Standard Requirements shall be collected through interviews, examination of documents, reports, records and observation of activities and conditions in the area of concern.
IA Team & Lead Auditor	5.8.2.2 All audit findings shall be documented and be reviewed by the audit team before issuing any NCR. The lead auditor may make necessary changes to the auditors' work assignment with the auditees' agreement. 5.8.2.3 Minor NCR will be issued based on the followings: (i) Not meeting a specific clause of ISO9000 Standard Requirements. (ii) Not meeting a part of a procedure. (iii)Not meeting customer's requirements. The corrective action to be taken can be referred to the procedure of "Corrective Action 5.8.2.4 Major NCR will be issued when there is a repetitive default/non-compliance from various areas which leads to a system breakdown/failure or might affect directly the quality of the services given. AEC will be given 6 months to review and revise its system. 5.8.2.5 Observation will be issued when there is an opportunity for improvement on parts of the system established.

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TITLE : INTERNAL AUDIT	**DATE : 01/10/2009**
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Table 4.7: Continued

RESPONSIBILITY	DETAILED PROCEDURE
IA Team & Lead Auditor	The observation needs to be rectified, and the corrective action will be verified during the following internal audit exercise. 5.8.2.6 The process of issuing NCR is as follows: (i) Details of Nonconformance. (ii) Clause of ISO 9000 Standard. (iii)Auditee Witnessing the Nonconformance.
Auditees	5.8.2.7 To investigate the root cause of the problem (Refer to the Procedure of Corrective Action).
IA Team	5.8.3 Closing Meeting 5.8.3.1 At the end of the audit, after preparing the audit report, the audit team shall hold a meeting with the auditees' Directors and if applicable with those responsible staff for the functions concerned in order to present audit findings.
IA Team	5.8.4 Follow Up 5.8.4.1 The auditor shall record and sign on the NCR form after all corrective action has been taken. These NCR will be considered completed if the auditor is satisfied with the corrective action taken. 5.8.4.2 If the auditor is not satisfied with the corrective action been taken, a specific time will be given to auditee to take necessary action.
IA Team & Auditees	5.8.4.3 Corrective action and subsequent audit shall be completed within an agreed time period. 5.8.4.4 Once the corrective action has been taken and auditor is satisfied, the NCR will be closed and verified by the auditor.
MR/DMR	5.9 MR/DMR is responsible to review closing out action report that has been implemented effectively.

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Table 4.7: Continued

RESPONSIBILITY	DETAILED PROCEDURE
MR/DMR	5.10 Report the audit results to the Management Review Meeting and maintain the audit reports.
Members of Management Review Meeting	5.11 Review the reports and ensure that the auditees take any necessary corrective actions needed based on the audit findings.

6 QUALITY RECORDS

Table 4.8: Quality Record for Internal Audit

NO	RECORDS	LOCATION	RETENTION	RESPONSIBILITY
1	Completed NCR Forms	Filing Cabinet	Five Years	Administrative Assistant
2	Completed Observation Forms	Filing Cabinet		Administrative Assistant
3	Summary Report of Internal Audit	Filing Cabinet	Five Years	Administrative Assistant
4	Audit Notes	Filing Cabinet	Five Years	Administrative Assistant
5	Minutes of Management Review Meeting	Filing Cabinet	Five Years	Administrative Assistant

4.3.5 Control of Nonconforming Product/Services

AUTOMOTIVE EXCELLENCE CENTER	**VERSION NO : 00** **REVISION NO : 00**
TITLE : CONTROL OF NONCONFORMING PRODUCT/SERVICES	**DATE : 01/10/2009**
DOCUMENT NO. : PROCEDURE 8.3	**PAGE : 1/6**

CONTROL OF NON-CONFORMIG PRODUCTS/SERVICES

Prepared By :-	**Approved By :-**
Signature :	Signature :
Name :	Name :
Position :	Position :
Date :	Date :

CONTROLLED COPY NO. :

AUTOMOTIVE EXCELLENCE CENTER	VERSION NO : 00 REVISION NO : 00
TITLE : CONTROL OF NONCONFORMING PRODUCT/SERVICES	**DATE : 01/10/2009**
DOCUMENT NO. : PROCEDURE 8.3	**PAGE : 2/6**

3. OBJECTIVE

The procedure is established in order to ensure that nonconforming services or products are identified and controlled to prevent their unintended use or delivery. This control provides for the identification, documentation and evaluation of nonconforming services and for notification of the functions concerned.

4. SCOPE

This procedure applies to the control of nonconforming services as well as products/materials that may be considered part of the service as provided by the AEC involved in the quality system implementation in Research and Development.

3 DEFINITIONS

3.1	MR	: Management Representative
3.2	DMR	: Deputy Management Representative
3.3	HOD	: Head of Department
3.4	DD	: Deputy Director of AEC
3.5	AD	: Assistant Director of AEC
3.6	MRM	: Management Review Meeting
3.7	CAQAD	: Centre for Academic Quality Assurance and Development
3.8	Products/materials	: the products and materials that includes incoming products from suppliers and any items such as brochures and pamphlets that relate to "Research and Development" activities.

4 REFERENCES

1. Quality Manual QM 8.0 (Control of Nonconforming Product/Service)
2. ISO 9001:2008 Standard (Clause 8.3)
3. Procedure on Corrective Action
4. Procedure on Management Review
5. Procedure on Internal Audit

5 RESPONSIBILITIES AND DETAILED PROCEDURE

Table 4.9: Responsibilities and Detailed Procedure for Control of Nonconforming Product/Services

RESPONSIBILITY		DETAILED PROCEDURE
		Nonconforming Products/Materials and Services are identified in any of the following ways: **<u>Incoming Products from Suppliers/Vendors</u>**
DD/AD/EO	5.1	Receive the products from suppliers/vendors.
DD/AD/EO	5.2	Check the incoming products or materials ordered from suppliers.
DD/AD/EO	5.3	Return to suppliers/vendors if the ordered products or materials are damaged or do not meet the requirements.
DD/AD/EO	5.4	Prepare the reports and keep the records in the file.
		<u>Internal Services</u>
DD/AD/EO	5.5	Receive the reports on nonconforming services.
DD/AD/EO	5.6	Forward the reports to the Director of AEC.
Director	5.7	Discuss the reports with HOD/DD/AD/EO or any related parties.
HOD/DD/AD	5.8	Decide on the corrective action needed.
DD/AD/EO	5.9	Prepare the reports on the corrective action taken for the filing purposes.

AUTOMOTIVE EXCELLENCE CENTER	VERSION NO : 00 REVISION NO : 00
TITLE : CONTROL OF NONCONFORMING PRODUCT/SERVICES	DATE : 01/10/2009
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Table 4.9: Continued

RESPONSIBILITY	DETAILED PROCEDURE
	Services Provided by External Sources
DD/AD/EO	5.10 Receive the report of the services provided by external sources.
	5.11 If the services given do not comply with the requirements, discuss the matter with the of Head of Departments.
HOD/DD/AD	5.12 Decide on the corrective action needed.
DD/AD/EO	5.13 Prepare the reports on the corrective action taken for the filing purposes
	Nonconforming Services
HOD/DD/AD	5.14 AEC Staff whose performances are below the required weighted average. (i) 1st time below 80% - send reminder letter, and copy to the Head of AEC. (ii) To monitor and identify the area of weaknesses and recommend for training.
	5.15 To monitor the progress and the performance of the researcher.
HOD/DD/AD	5.16 Part-time expertise need to be appointed if there are not enough lecturers in AEC.

6.0 QUALITY RECORD

Table 4.10: Quality Record for Control of Nonconforming Product/Services

NO	RECORDS	LOCATION	RETENTION PERIOD	RESPONSIBILITY
1	Internal Audit Reports	Filing Cabinet	One Years	Administrative Assistant
2	Minutes of Management Review Meeting for Quality System	Filing Cabinet	Five Years	Administrative Assistant
3	Reports on Corrective Action	Filing Cabinet	Five Years	Administrative Assistant

4.3.6 Corrective Action Procedure

AUTOMOTIVE EXCELLENCE CENTER	VERSION NO : 00 REVISION NO : 00
TITLE : CORRECTIVE ACTION	DATE : 01/10/2009
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CORRECTIVE ACTION

Prepared By :-	Approved By :-
Signature :	Signature :
Name :	Name :
Position :	Position :
Date :	Date :

CONTROLLED COPY NO. :

AUTOMOTIVE EXCELLENCE CENTER	VERSION NO : 00 REVISION NO : 00
TITLE : CORRECTIVE ACTION	**DATE : 01/10/2009**
DOCUMENT NO. : PROCEDURE 8.5.2	**PAGE : 2/6**

18. OBJECTIVE

The procedure is established in order to clarify and explain the procedures and guidelines on corrective action and improvement effort for the efficient and effective quality system of Research and Development at the AEC, UMP.

19. SCOPE

This procedure is used to investigate the nonconformance services in the quality system of Research and Development in AEC and take any immediate corrective action to eliminate the cause of nonconformities in order to prevent their recurrences.

20. DEFINITION

3.1	MR	:	Management Representative.
3.2	DMR	:	Deputy Management Representative
3.3	DD	:	Deputy Director of AEC
3.4	AD	:	Assistant Director of AEC
3.5	CQC	:	Council of Quality Culture
3.6	MRM	:	Management Review Meeting
3.7	CAQAD	:	Centre for Academic Quality Assurance and Development

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3.8 **Council of Quality Culture** is the meeting that is held to discuss the quality culture programmes for the betterment of the University's quality system.

3.9 **Management Review Meeting** is the meeting that is held every twelve (12) months to discuss issues related to the Quality System implementation, and to review the achievements on the principles and objectives of the Quality System adopted.

3.10 **Corrective Action** refers to actions taken to overcome the causes of problems and to prevent problems from happening again as well as to lessen the problems from occurring in the future by following the stated rules and regulations.

3.11 **Improvement Effort** refers to any suggestion for the effectiveness and efficiency of the Quality System.

21. REFERENCES

4.1 Quality Manual QM 8.0 (Internal Audit).
4.2 ISO 9001:2008 Standard Requirements (Clause 8.2.2).
4.3 Procedure on Management Review Meeting
4.4 Procedure on Customer Complaints.
4.5 Procedure on Internal Audit.

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5 RESPONSIBILITIES AND DETAILED PROCEDURE

Table 4.11: Responsibilities and Detailed Procedure for Corrective Action

RESPONSIBILITY	DETAILED PROCEDURE
DD/AD	5.1 Collect all information and data that are related to the followings: i) Customer Complaints and Suggestions, ii) Internal Audits, iii) External Audits, iv) Surveys, and v) Other non-conformance services in the Quality System.
Directors & DD/AD	5.2 <u>Customer Complaints</u> i) Upon receiving a complaint, the officer-in-charge should identify the genuineness of the complaint. ii) Investigate the root cause of the problem. iii) Discuss with the relevant authority on the corrective action needed. Corrective action taken must ensure that nonconformities will not recur. iv) Inform the complainant on any corrective action taken. v) Verify the effectiveness of corrective actions taken. vi) Review and analyze all the reports and data collected and use statistical techniques if necessary.
Directors & DD/AD	5.3 <u>Internal Audits</u> i) Upon receiving an NCR, the officer-in-charge should investigate the root cause of the problem. ii) Discuss with the relevant authority on the corrective action needed. Corrective action taken must ensure that nonconformities will not recur.

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Table 4.11: Continued

RESPONSIBILITY		DETAILED PROCEDURE
Directors & DD/AD	iii)	Specify the root cause of the problem, corrective action and completion date on the section provided on the NCR form issued by the auditor.
Directors & DD/AD	5.4	<u>Other Non-Conformance Services</u> The procedures to be followed on how to handle other non-conformances can be referred to the procedure "Control on Non-Conforming Products/Services". The corrective action needed for any non-conformance occurred during the operation can be lodged in the "Internal Audit/Corrective Action/Preventive Action Form".
DD/AD	5.5	Compile all of the above reports and submit to the CAQAD (Secretariat).
MRM	5.6	Review the reports on the corrective action as well as improvement efforts for further implementation (if necessary), and request all relevant parties to ensure that problems will not recur.
QAU	5.7	File all reports on the implemented corrective action and improvement efforts.

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6 QUALITY RECORDS

Table 4.12: Quality Record for Corrective Action

NO	RECORDS	LOCATION	RETENTION	RESPONSIBILITY
1	Customer Complaint Reports (Completed Customer Complaint Forms & Feedback Log of Customer Complaints)	Filing Cabinet	Five Years	Administrative Assistant
2	Summary Report of Internal Audit	Filing Cabinet	Five Years	Administrative Assistant
3	Completed NCR Forms	Filing Cabinet	Five Years	Administrative Assistant
4	Completed Corrective Action Forms	Filing Cabinet	Five Years	Administrative Assistant
5	Minutes of Management Review Meeting for Quality System	Filing Cabinet	Five Years	Administrative Assistant

4.3.7 Preventive Action Procedure

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TITLE : PREVENTIVE ACTION	**DATE : 01/10/2009**
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PREVECTIVE ACTION

Prepared By :-	Approved By :-
Signature :	Signature :
Name :	Name :
Position :	Position :
Date :	Date :

CONTROLLED COPY NO. :

AUTOMOTIVE EXCELLENCE CENTER	VERSION NO : 00
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22. OBJECTIVE

The procedure is established in order to clarify and explain the procedures and guidelines on the preventive actions for the efficient and effective quality system of Research and Development at the AEC, UMP.

23. SCOPE

This procedure is used to determine actions to eliminate the causes of potential nonconformities in the quality system of Research and Development and take any immediate preventive actions in order to prevent their occurrences.

24. DEFINITION

3.1	MR	:	Management Representative.
3.2	DMR	:	Deputy Management Representative
3.3	HOD	:	Head of Department.
3.4	DD	:	Deputy Director of AEC
3.5	AD	:	Assistant Director of AEC
3.6	EO	:	Executive Officer of AEC
3.7	CQC	:	Council of Quality Culture
3.8	MRM	:	Management Review Meeting
3.9	CAQAD	:	Centre for Academic Quality Assurance and Development

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3.8 **Council of Quality Culture** is the meeting that is held to discuss the quality culture programmes for the betterment of the University's quality system.

3.9 **Management Review Meeting** is the meeting that is held every twelve (12) months to discuss issues related to the Quality System implementation, and to review the achievements on the principles and objectives of the Quality System adopted.

3.10 **Preventive Action** means actions taken based on the analysis of data collected from related activities to prevent the occurrence of potential problems

25. REFERENCES

4.1 Quality Manual QM 8.0 (Preventive Action).

4.2 ISO 9001:2008 Standard Requirements (Clause 8.5.3).

4.3 Procedure on Management Review Meeting

4.4 Procedure on Customer Complaints.

4.5 Procedure on Internal Audit.

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26. RESPONSIBILITIES AND DETAILED PROCEDURE

Table 4.13: Responsibilities and Detailed Procedure for Preventive Action

RESPONSIBILITY	DETAILED PROCEDURE
DD/AD/EO	5.1 Collect all information and data that are related to the followings: vi) Customer Complaints, vii) suggestions on preventive actions from staff who have been involved in the quality system implementation, viii) Internal Audits, ix) Other non-conformance services in the Quality System.
Director/HOD/DD	5.2 Review and analyze all the reports and data collected and use statistical techniques if necessary. 5.3 Evaluate the need for action to prevent occurrence of nonconformities. 5.4 Identify the solutions for the preventive actions needed in order to ensure that the nonconformities will not occur. 5.5 Determine and implement the preventive action needed
DD/AD/EO	5.6 Prepare the report that consists of suggestions and solutions of the preventive action needed through the form as in "Internal Audit/Corrective Action/Preventive Action Form" 5.7 Table the reports in the AEC meeting.
Faculty Board Meeting	5.8 Review the reports on the preventive action as well as improvement efforts for further implementation (if necessary).
Dean/Director	5.9 Ensure that relevant staffs involved implement the preventive actions which had been approved.
Administrative Assistant	5.10 File all reports on the implementation achievement of the preventive actions and improvement efforts.

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6 QUALITY RECORDS

Table 4.14: Quality Record for Preventive Action

NO	RECORDS	LOCATION	RETENTION	RESPONSIBILITY
1	Customer Complaint/ Suggestion Reports	Filing Cabinet	Five Years	Administrative Assistant
2	Internal Audit Reports	Filing Cabinet	Five Years	Administrative Assistant
3	Minutes of Management Review Meeting for Quality System	Filing Cabinet	Five Years	Administrative Assistant
4	Completed Preventive Action Form	Filing Cabinet	Five Years	Administrative Assistant

4.4 BENEFITS AND CONSTRAINTS FROM IMPLEMENTATION OF ISO 9001: 2008 AT AEC

In the implementation of ISO 9001: 2008 Quality Management System at AEC, the constraints are more than the benefits. The purpose of establishment of quality manual and operation procedures is to avoid the improper planning from the leader, lack of continuous training and education, and failure to continually improvement. In the case of research and development for automotive sector, sometimes it is difficult to fulfill the customer satisfaction and requirements. This is related to the improper planning of AEC which resulted to the customer complaints thus will faded AEC into the problem to achieve the world class Automotive Excellent Center. Besides that, the new staffs of AEC that were newly hired are not trained properly. Thus, the operation method that used by the new staff is not acceptable. Moreover, AEC also faces the failure to continually improve because they did not provide a good corrective action counter the problems.

The benefits of ISO 9001: 2008 Quality Management System can improve research and development process, customer satisfaction, staff participation and supplier performance in AEC. From the establishment of this ISO 9001: 2008 quality manual and operation procedures, hopefully it can explanation about the guiding principles of AEC based on ISO 9001:2008 standard requirements in “Research and Development” and can help AEC to achieve the world class Automotive Excellent Center.

CHAPTER 5

CONCLUSION AND RECOMMENDATION

5.1 INTRODUCTION

This project has achieved the objectives which are to study about the requirements and implementation of ISO 9001:2008 in quality management system for Automotive Excellence Center in UMP by the establishment of quality manual and operation procedures. AEC need to apply ISO 9000 QMS (Quality Management System) structure to set up a management system, including complete SOP and needed reports/forms, to ensure AEC's quality of research and development in automotive field. In accordance with the structure of ISO 9001：2000 Quality Management System, an integrated quality management system which consisted of a quality manual and 6 mandatory procedures were established.

5.2 CONCLUSION

5.2.1 Establishment of Quality Manual

In this thesis, ISO 9001:2008 quality manual has been successfully developed to give support to related people in the delivery processes of the extensive research and developments in the automotive field at Automotive Excellence Center, UMP. In accordance with the structure of ISO 9001: 2008 Quality Management System, AEC quality manual was divided to 8 sections, including:

(i) Section 1: Introduction of Quality Manual;
(ii) Section 2: Purpose and Scope of Quality Manual;

(iii) Section 3: Quality Policy and Objective;
(iv) Section 4: Quality Management System;
(v) Section 5: Management Responsibility;
(vi) Section 6: Resource Management;
(vii) Section 7: Product /Service Realization;
(viii) Section 8: Measurement, analysis and improvement.

This quality manual gives a description, readily available for all AEC staff, of the quality management system and the structure of the documentation used therein. It contains the quality policy, the quality objectives and the quality strategies of AEC.

5.2.2 Establishment of Operation Procedures

Applying the process-oriented philosophy in the ISO quality management system, 6 mandatory documented procedures already established to define standard operations for all AEC's research, development and administrative support activities. All documented procedures were written in the same 5 section format including:

(i) Section 1: Purpose- to explain purpose of that procedure;
(ii) Section 2: Scope- to define applicable area of that procedure;
(iii) Section 3: Responsibility to define related organizations and responsible personnel;
(iv) Section 4 : Operation Process- to explain the applicable processes and control points of related operations;
(v) Section 5: Related Document- to explain the relationship of this procedure with the other procedures and QM.

This procedures or step-by-step description of how, when and where the elements of the quality system are conducted, and who is responsible for conducting them. The third level includes detailed work instructions for the qualified staff about the performance of a specific duty. Finally, level four includes all the records, forms, registers, files, reports, etc.

5.3 RECOMMENDATION

Since Automotive Excellence Center did not managed to accredit the MS ISO 9001: 2008 certification, it is strongly recommend for Automotive Excellence Center to get the MS ISO 9001: 2008 certification because it can help AEC to enhance their management system and give them the best practice in research and development in automotive sector. In the future development, Automotive Excellence Center should develop objective measures of the quality system performance, including financial, experiences and administration quality indicators by make a consider on future research on comparison between the ISO 9000 certified organization with the non-ISO 9000 certified organization.

Automotive Excellence Center also should look into structuring the quality system from more to less comprehensive elements by map and document the research and development processes. Besides that, AEC should look into comparing the performance among the staff of Automotive Excellence Center based of the staff and the actual printed document. This will lead to a better explanation to the impact of implementing ISO 9001:2008 Quality Management System the productivity and Automotive Excellence Center management system.

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APPENDIX A

GANTT CHART FOR FYP I

Project Activities		Week															
		1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**
1	Title selection																
2	Objective and scope																
3	Project background																
4	Flow chart and Gantt chart																
5	Literature review																
6	Chapter 1: Introduction																
7	Chapter 2: Literature Review																
8	Chapter 3: Methodology																
9	Presentation preparation																
10	Presentation																
11	Draft I																
12	Submit Draft I																

APPENDIX B

GANTT CHART FOR FYP II

Project Activities		Week															
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1	Search for company																
2	Prepare a letter to industry																
3	First visit to the company																
4	Research in a company																
5	Data collection																
6	Result and analysis																
7	Discussion and recommendation																
8	Presentation preparation																
9	Presentation																
10	Draft II																
11	Submit draft II																

APPENDIX C

APPROVED SUPPLIERS LIST FORM

APPROVED SUPPLIERS LIST				
COMPANY NAME	ADRESS	PHONE & FAX NO.	PRODUCT/SERVICE SUPPLIED	ASSESSMENT TYPE
Approved:____________________ Date:________________________________				

APPENDIX D

PURCHASE REQUISITION LIST FORM

Center Automotive Excellence of FKM

PURCHASE REQUISITION

Requisition no.:
Date:

Required by: ______________
Deliver to:_______________
Job no.: __________________

Preferred supplier:
(if known)

ITEM	QUANTITY	DETAILED DESCRIPTION	ITEM COST (if known)

Prepared by: ______________ Date: ______________ Order no. allocated:

Approve by: ______________ Date: ______________ ________________

Distribution: White – Purchasing officer Pink - Originator

APPENDIX E
PURCHASE ORDER FORM

Center Automotive Excellence of FKM Universiti Malaysia Pahang, Karung Berkunci 12 25000 Kuantan, Pahang Tel: 09-549 2624 Facsimile: 09-549 2525	**PURCHASE ORDER** Supplier:	Order no.: Date: Packing, delivery dockets report and invoices must include the job number. Date required:

ITEM	QUANTITY	DETAILED DESCRIPTION	ITEM COST
Authorised by:	Date:	**TOTAL**	

Distribution: White – Supplier Pink – Stores Yellow – Job file Blue – Fixed in book

APPENDIX F

AUDIT SCHEDULE FORM

<table>
<tr><td rowspan="2">AUDIT SCHEDULE</td><td colspan="6">Prepare by:</td><td colspan="6">Date:</td></tr>
<tr><td colspan="6">Approve by:</td><td colspan="6">Date:</td></tr>
<tr><td rowspan="2">ACTIVITY TO BE AUDITED</td><td colspan="6">Rev. no.:</td><td colspan="6">Year:</td></tr>
<tr><td>JAN</td><td>FEB</td><td>MAR</td><td>APR</td><td>MAY</td><td>JUN</td><td>JUL</td><td>AUG</td><td>SEP</td><td>OCT</td><td>NOV</td><td>DEC</td></tr>
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Date schedule reviewed				

APPENDIX G

AUDIT REGISTER FORM

AUDIT REGISTER						
Audit Number	Audit Date	Department or area audited	Scope/Procedure	Nominated auditor	No. of CARs issued	Follow-up

APPENDIX H

AUDIT CHECKLIST FORM

AUDIT CHECKLIST			
Audit no:			
Question no.	Question	Category (A/O/C)	Remarks

APPENDIX I

AUDIT REPORT LEAD SHEET

<table>
<tr><th colspan="4">AUDIT REPORT LEAD SHEET</th></tr>
<tr><td colspan="4">Audited department/ organisation:</td></tr>
<tr><td>Audit date:</td><td colspan="3">Audit no:</td></tr>
<tr><td>Auditees:</td><td colspan="2">No. of CARs:</td><td>No. of observation:</td></tr>
<tr><td>Audit team:</td><td colspan="3">Reference documents:</td></tr>
<tr><td>Summary:</td><td></td><td colspan="2"></td></tr>
<tr><td>Prepared by:
Date:</td><td>Approved by:
Date:</td><td colspan="2">Distribution:</td></tr>
</table>

APPENDIX J

AUDIT REPORT SHEET

AUDIT REPORT SHEET	
Audit no.:	Page of

APPENDIX K

NONCONFORMANCE REPORT FORM

NONCONFORMANCE REPORT		
Job no.:	University ref. no.:	NCR no.:
Description of nonconformance: Prepared by:		Date:
Proposed disposition action: 1. Rework to meet specification ☐ 3. Repair ☐ Prepared by:	2. Scrap ☐ 4. Use-as-is* ☐	
Proposed action approval: Approved ☐ * Concession request ref.: ____________________ ** Comments: ____________________	Not approved** ☐	
Signed:		Date:
Verification of any rectification: - ____________________ ____________________ ____________________ ____________________ ____________________ Signed:		Date:

APPENDIX L

CORRECTIVE ACTION REQUEST FORM

<table>
<tr><td colspan="4">CORRECTIVE ACTION REQUEST</td></tr>
<tr><td>Audit [ ] No.: _______
Complaint [ ]
NCR [ ]</td><td colspan="2">CAR no.: _______________</td><td>Date: ___________________</td></tr>
<tr><td colspan="4">Department:</td></tr>
<tr><td colspan="4">Audit criteria:</td></tr>
<tr><td colspan="2">Auditor:</td><td colspan="2">Department
representative:</td></tr>
<tr><td colspan="4">Deficiency:
Signature: _________________________ Signature: _________________________
Department representative Auditor/Quality manager</td></tr>
<tr><td colspan="4">Corrective action

Date for completion of corrective action: _____________________________________
Signature: _________________________ Date: ______________________________
Department representative</td></tr>
<tr><td colspan="4">Action taken to prevent recurrence of problem

Date for completion of action to prevent recurrence: __________________________
Signature: _________________________ Date: ____________________________
Department representative</td></tr>
<tr><td colspan="4">Follow-up and close out

Proposed follow-up date: ____
Follow-up details
CAR close out date: ___________________ Signature: _____________________</td></tr>
</table>

APPENDIX M

CORRECTIVE ACTION REQUEST STATUS LOG FORM

CORRECTIVE ACTION REQUEST (CAR) STATUS LOG							
CAR no.	CAR issued to	Date CAR issued	Response due date to CAR	Corrective action completion date	Recurrence action completion date	Proposed follow-up date	Date CAR closed