CURTISS-WRIGHT CONTROLS INDUSTRIAL

QUALITY AND ENVIRONMENTAL SYSTEM MANUAL
Table of Contents

REVISION HISTORY ............................................ 3

WCI QUALITY AND ENVIRONMENTAL POLICY . 4
Organizational Description ......................... 4
Electronic Throttle Controls .......................... 4
Pneumatic Throttle Controls and Valve Lines .... 4
Hydraulic Throttle Controls ............................. 4

WILLIAMS CONTROLS LOCATIONS .................... 4

MANAGEMENT TEAM STRUCTURE ........................ 5

QUALITY & ENVIRONMENTAL SYSTEM PROCESS INTERACTION MAP ........................................ 8

1 SCOPE .......................................................... 9
  1.1 General ................................................... 9
  1.2 Application ............................................ 9

2 COMPANY INFORMATION .......................... 9

WMCO Vision Statement .................................... 9

3 TERMS AND DEFINITIONS .......................... 9

4 QUALITY AND ENVIRONMENTAL MANAGEMENT SYSTEM ...................................................... 10

  4.1 General Requirements ............................. 10
    4.1.1 General Requirements Supplemental ......... 10
  4.2 Documentation Requirements .................. 10
    4.2.1 General Requirements .......................... 10
    4.2.2 Quality and Environmental Systems Manual .. 11
    4.2.3 Control of Documents ......................... 11
    4.2.4 Control of Records ............................. 11

5 MANAGEMENT RESPONSIBILITY ...................... 12

  5.1 Management Commitment .......................... 12
    5.1.1 Process Efficiency ............................... 12
  5.2 Customer Focus ....................................... 12

  5.3 Quality and Environmental Policy .......... 13
  5.4 Planning .................................................. 14
    5.4.1 Quality and Environmental Objectives .. 14
      5.4.1.1 Quality Objectives Supplemental ........ 14
    5.4.2 Quality and Environmental Management System Planning ........................................ 14
  5.5 Responsibility, Authority and Communication .................................................. 14
    5.5.1 Responsibility and Authority .............. 14
      5.5.1.1 Responsibility for Quality ............ 14
    5.5.2 Management Responsibility .................. 14
    5.5.3 Internal Communication .................... 16
  5.6 Management Review ..................................... 16
    5.6.1 General ............................................. 16
      5.6.1.1 Quality and Environmental Management System Performance ........................................ 16
    5.6.2 Review Input ..................................... 16
      5.6.2.1 Review Input Supplemental ............ 16
    5.6.3 Review Output .................................. 17

6 RESOURCE MANAGEMENT ................................ 17

  6.1 Provision of Resources ......................... 17
  6.2 Human Resources ..................................... 17
    6.2.1 General ............................................. 17
    6.2.2 Competence, Awareness and Training ...... 17
      6.2.2.1 Product Design Skills ................. 17
      6.2.2.2 Training ..................................... 17
      6.2.2.3 Training On The Job .................... 17
    6.2.3 Employee Motivation and Empowerment ........ 18
    6.2.4 Infrastructure .................................... 19
6.3.1 Plant Facility and Equipment Planning ................................................................. 19
6.3.2 Contingency Plans ................................................................................................. 19
6.4 Work Environment .................................................................................................. 19
   6.4.1 Personnel Safety to Achieve Product Quality .................................................. 19
   6.4.2 Cleanliness of Premises ..................................................................................... 19
7 NEW PRODUCT INTRODUCTION (NPI) ................................................................. 20
7.1 Planning of NPI ......................................................................................................... 20
   7.1.1 Planning of NPI-supplemental ......................................................................... 20
   7.1.2 Acceptance Criteria .......................................................................................... 20
   7.1.3 Confidentiality .................................................................................................. 20
   7.1.4 Change Control ................................................................................................. 20
7.2 Customer Related Processes ...................................................................................... 22
   7.2.1 Determination of Requirements Related To The Product ................................. 22
      7.2.1.1 Customer Designated Special Characteristics ........................................... 22
   7.2.2 Review of Requirements Related To The Product .......................................... 22
      7.2.2.1 Review of Requirements Related To The Product-Supplemental ........... 22
      7.2.2.2 Organization Manufacturing Feasibility .................................................... 22
   7.2.3 Customer Communication .................................................................................. 22
      7.2.3.1 Customer Communication Supplemental ................................................ 23
7.3 Design and Development .......................................................................................... 23
   7.3.1 Design and Development Planning ................................................................. 23
      7.3.1.1 Multidisciplinary Approach ..................................................................... 23
   7.3.2 Design and Development Inputs ....................................................................... 23
      7.3.2.1 Product Design Input .............................................................................. 23
      7.3.2.2 Manufacturing Process Design Input ..................................................... 23
      7.3.2.3 Special Characteristics ............................................................................ 24
   7.3.3 Design and Development Outputs ...................................................................... 24
      7.3.3.1 Product Design Outputs-supplemental ...................................................... 25
      7.3.3.2 Manufacturing Process Design Outputs ................................................... 25
7.4 Purchasing .................................................................................................................. 27
   7.4.1 Purchasing Process ............................................................................................. 27
      7.4.1.1 Regulatory Conformity .......................................................................... 27
      7.4.1.2 Supplier Quality Management System Development ............................... 27
      7.4.1.3 Customer Approved Sources ................................................................. 27
   7.4.2 Purchasing Information ..................................................................................... 27
   7.4.3 Verification of Purchased Product ...................................................................... 27
      7.4.3.1 Incoming Product Quality ................................................................. 27
      7.4.3.2 Supplier Monitoring ............................................................................. 29
8 MEASUREMENT, ANALYSIS AND IMPROVEMENT ............................................... 33
8.1 General ....................................................................................................................... 33
   8.1.1 Identification of Statistical Tools ....................................................................... 33
   8.1.2 Knowledge of Basic Statistical Concepts ......................................................... 33
8.2 Monitoring and Measurement .................................................................................... 33
   8.2.1 Customer Satisfaction ...................................................................................... 33
      8.2.1.1 Customer Satisfaction-supplemental ......................................................... 33
   8.2.2 Internal Audits .................................................................................................. 33
8.2.2.1 Quality and Environmental Management System Audit .................. 33
8.2.2.2 Manufacturing Process Audit ............................. 33
8.2.2.3 Product Audit ............................................. 33
8.2.2.4 Internal Audit Plans ........................................ 34
8.2.2.5 Internal Auditor Qualification....................... 34
8.2.3 Monitoring and Measurement of Manufacturing Processes .................. 34
8.2.4 Monitoring and Measurement of Product............................ 34
8.2.4.1 Layout Inspection and Functional Testing ....................... 34
8.2.4.2 Appearance Items ........................................ 34
8.3 Control of Nonconforming Product ................................ 36
8.3.1 Control of Nonconforming Product-supplemental .............. 36
8.3.2 Control of Reworked Product .................................. 36
8.3.3 Customer Information .................................... 36
8.3.4 Customer Waiver .......................................... 36
8.4 Analysis of Data ............................................. 36
8.4.1 Analysis and Use of Data ..................................... 36
8.5 Improvement ............................................... 37
8.5.1 Continual Improvement .................................... 37
8.5.2 Corrective Action ......................................... 37
8.5.2.1 Problem Solving ....................................... 37
8.5.2.2 Error Proofing .......................................... 37
8.5.2.3 Corrective Action Impact ............................... 37
8.5.2.4 Rejected Product Test/Analysis ......................... 37
8.5.3 Preventive Action ......................................... 37
9 SUPPORT FUNCTIONS ........................................ 39
9.1 Support Functions ........................................... 39
## REVISION HISTORY

<table>
<thead>
<tr>
<th>Revision</th>
<th>Description of Change</th>
<th>Effective Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>B</td>
<td>Manual revised and formatted to address CAR 200453Q issued as the result of stage 1 14001 audit</td>
<td>10/26/2004</td>
</tr>
<tr>
<td>C</td>
<td>Changed Management Representative responsibility from Quality Manager to Director of Quality. Changed document number to &quot;WQM&quot; to reflect the new document descriptions</td>
<td>10/1/2007</td>
</tr>
<tr>
<td>D</td>
<td>Revised per CAR 546. Added the statement &quot;Williams Controls does not externally communicate its significant Environmental Aspects at this time.2) Removed the reference of 4.3.4 from the QEMS manual index as the clause is no longer valid.</td>
<td>1/23/2008</td>
</tr>
<tr>
<td>E</td>
<td>Revised policy to include reference to product and employee safety</td>
<td>7/17/2008</td>
</tr>
<tr>
<td>F</td>
<td>Revised policy; added 'and other requirements.'</td>
<td>7/16/2010</td>
</tr>
<tr>
<td>G</td>
<td>Many minor changes following document review by Dir. Of Quality (NPI references, NCM references, TS version change, page #s)</td>
<td>8/17/2010</td>
</tr>
<tr>
<td>H</td>
<td>Added India Manufacturing facility to Williams Controls Locations. Changed Director of Quality to Quality Manager. Updated QEMS Representative, Quality Manager and updated aesthetics of manual.</td>
<td>7/18/2011</td>
</tr>
<tr>
<td>I</td>
<td>WCI defined as a support function in Design Approval, Laboratory, and Supplier Development. Process Map updated to reflect WCIPL Support Functions</td>
<td>6/6/2012</td>
</tr>
<tr>
<td>J</td>
<td>WMCO acquired by Curtis Wright. Changes to ownership and management roles. Added WMCO Vision Statement</td>
<td>1/22/2013</td>
</tr>
</tbody>
</table>
WCI QUALITY AND ENVIRONMENTAL POLICY

Williams Controls is committed to establishing and maintaining a Quality and Environmental System that meets the requirements of TS 16949 and ISO14001. Through these principles, we promote:

- Employee safety
- Product safety
- Customer satisfaction
- Pollution prevention
- Compliance with Environmental Legislation, Regulations, and other requirements

To achieve our Quality, Safety and Environmental objectives and targets, we involve employees in continuous improvement efforts that allow us to measure progress and promote team work.

Organizational Description

Williams Controls is the world leader in electronic throttle controls for commercial vehicles. We work in partnership with our OEM customers to provide custom designs for specific applications. Williams Controls offers customer pedal systems, adjustable pedal systems for the truck, bus and RV markets as well as hand control systems for the off-road market. In addition, we provide a vast selection of standard designs available for many vehicle applications.

Electronic Throttle Controls

Williams Controls has more electronic throttle control experience than any other manufacturer in the world. Whether it is for commercial vehicle, off-road or recreational applications, Williams can design an electronic throttle control to meet the most demanding specifications. Custom pedal systems, adjustable pedal systems, and hand controls systems incorporating clutch, brake and accelerator controls are available for most applications.

Williams can take basic ergonomic, dimensional, electrical, and aesthetic requirements and provide a complete "black-box" design of the product. Williams' strategy is to maximize the value provided to the OEM by taking responsibility for the design, development, and validation of the pedal system.

Pneumatic Throttle Controls and Valve Lines

Pneumatic throttle systems are used to minimize application force requirements in systems where an operator is located far from the engine he is controlling. They also provide an effective, low cost method of independently controlling a single engine from two operator stations. Williams pneumatic throttle controls are powered by compressed air from a vehicle’s accessory air system.

Hydraulic Throttle Controls

Williams developed hydraulic throttle controls for applications without onboard compressed air. They are used in equipment where mechanical linkages are difficult to route and maintain.

WILLIAMS CONTROLS LOCATIONS

Headquarters
Williams Controls Industries, Inc.
Portland, Oregon, USA

Manufacturing Locations
Williams Controls Industries, Inc.
Portland, Oregon, USA
Williams Controls (Suzhou) Co., Ltd
Suzhou, China
Williams Controls India Pvt. Ltd.
Pune, India

**Sales Offices**
Detroit Sales Office
Troy, Michigan, USA

Williams Controls Europe
Sauerlach, Germany

China Sales Office
Shanghai, China

**Representative Offices**
Korea Sales Office
Chung Hae T&C Corp.
Seoul, Korea

Japan Sales Office
c/o Kimura Corporation
Tokyo, Japan

India Sales Office
Pushkaraj Enterprises
Pune, India

**MANAGEMENT TEAM STRUCTURE**

The Management Team, in conjunction with the Management Representative, is responsible for reviewing the Quality Policy on an as-needed basis for applicability and communicating issues, concerns, or requests for revision to Williams Controls Management Team for consideration.
QUALITY & ENVIRONMENTAL SYSTEM PROCESS INTERACTION MAP

QUALITY MANAGEMENT SYSTEM
1 SCOPE

1.1 General

Williams Controls has developed and documented a Quality and Environmental Management System to demonstrate the company’s’ ability to assure products are consistently designed, developed, produced and delivered in a manner that meets customer quality, safety and regulatory requirements as well as consideration of Environmental Impact. This Quality and Environmental Management System is an integrated quality system designed with a process approach in mind, in compliance with both ISO/TS 16949:2009 Quality Management System Requirements and ANSI/ISO 14001:2004 Environmental Management Systems Requirements.

Customer satisfaction is achieved through application of effective and efficient Quality and Environmental management systems which undergo continuous improvement.

1.2 Application

Where any requirements of ISO/TS 16949:2009 cannot be applied due to the nature of Williams Controls activities and products, they are clearly identified and considered an exclusion.

Williams Controls Quality Management System satisfies the full range of requirements of ISO/TS 16949:2009.

2 COMPANY INFORMATION

Williams Controls is the leading worldwide supplier of electronic throttle pedal assemblies and pneumatic products to the commercial vehicle industry. Williams Controls customers include leading OEMs in the truck, bus, off-highway, and industrial vehicle markets.

Williams Controls is wholly owned by the Curtiss-Wright Corporation of Parsippany, New Jersey, USA. Curtiss Wright is a diversified, global enterprise delivering highly engineered, technologically advanced, value-added products and services to a broad range of industries in the motion control, flow control, and metal treatment market segments.

WMCO Vision Statement

We will be a Global Leader in Supplying Innovative Controls and Sensors to a Wide Range of Vehicle Customers by providing Superior Quality and Service.

3 TERMS AND DEFINITIONS

- QEMS: Quality and Environmental Management System
- WCI / WMCO: Williams Controls Inc
- CAR: Corrective and Preventive Action
4 QUALITY AND ENVIRONMENTAL MANAGEMENT SYSTEM

4.1 General Requirements

Williams Controls has established, documented, implemented and maintains Quality and Environmental Management Systems in accordance with the requirements of the ISO/TS 16949:2009 and ANSI/ISO 14001:2004. Control systems and requirements for documents and records required by each international standard and these systems are also defined within this manual. Williams Controls continuously improves the effectiveness of its Quality and Environmental Management Systems by performing the following:

**Identifies** the processes needed for our operations and their applications throughout the organization. **Determines** the sequence and interaction of these primary processes. A Process flow chart exists which describes the primary processes and interactions. **Determines** criteria and methods needed to ensure that both operation and management of these processes are effective. Management review meetings verify effectiveness of the QEMS. **Ensures** the availability of resources and information necessary to support the operation and monitoring of these processes via the Purchasing process. **Ensures** the monitoring, measurement and analysis of these processes. **Ensures** implementation of actions necessary to achieve planned results and continual improvement of these processes. **Processes** referred to above include processes for Management activities, Provision of Resources, NPI, and Measurement.

4.1.1. General Requirements Supplemental

QEMS processes outsourced to suppliers or contractors that may affect product conformity to requirements are monitored for conformance and identified within the applicable section of this QEMS Manual. Williams Controls recognizes that assuring control over outsourced processes does not negate their responsibility for conformance to specified requirements.

4.2 Documentation Requirements

4.2.1 General Requirements

Williams Controls QEMS is designed to meet the requirements of ISO/TS 16949:2009 and ISO 14001:2004 and to comply with our customers’ Quality and Environmental requirements. The QEMS Manual includes documented statements of the Quality Policy and Quality and Environmental objectives of Williams Controls.

The Quality and Environmental Management System Manual contains the highest level of policy and procedural documentation. It is an overview of the entire Williams Controls Quality and Environmental Management System.

Procedures and policies are established, documented and maintained as required. These procedures clarify and assign the specific responsibilities involved in the implementation and maintenance of the QEMS and the interrelation between the requirements and processes.

Work instructions detail specific duties and activities necessary to do individual jobs and to satisfy the requirements of the procedures. This includes documents needed by the organization to ensure effective planning, operation and management of processes.
Forms are documents used to collect and maintain evidence that the QEMS is being followed. Records also indicate that products are made and procedures are followed accurately and as required.

4.2.2 Quality and Environmental Systems Manual
This Manual documents Williams Controls QEMS to demonstrate the company’s ability to consistently provide product that meets customer demands and regulatory requirements. This manual establishes compliance with those standards and regulations listed in the applicable standards and regulations section of this manual. References to the documented procedures established for the QEMS and a description of the interaction between the processes of the QEMS are included.

This Manual applies to and provides comprehensive evidence to customers, suppliers and employees of what specific controls are available and implemented to ensure product and service quality. This manual governs the creation of quality related documents. It is revised as necessary to reflect the QEMS activities currently in use. It is issued on a controlled copy basis to internal functions affected by the Quality and Environmental Management System and on an uncontrolled basis to customers and suppliers.

Also included is the scope of the QEMS are the details of and justification for any exclusion per the applicable section of this QEMS Manual. (See section 1.2)

4.2.3 Control of Documents
Williams Controls has established a Procedure and maintains a system for controlling documents and data that relate to the QEMS.

Documents are maintained in a manner that ensures legibility and identification. All documents are reviewed and approved by an authorized function prior to initial issue or revision. Pertinent background information, nature of the change and revision status is identified, reviewed and recorded with a brief summary the changes. Revised documents are distributed to points of use as applicable. Obsolete documents are properly identified, removed from points of use and are kept separate from active documents.

4.2.3.1 Engineering Specifications
Williams Controls has established and maintains a system for reviewing customer contracts and specifications and coordinating related activities. Customer orders/requirements are reviewed before acceptance to ensure the requirements are clearly defined, documented, and mutually agreed upon. Resources are verified to ensure that Williams Control is capable of fulfilling the agreed upon requirements, per the contract.

Changes to contracts are processed and communicated to affected areas as described in the QEMS and NPI Procedures. The review of Customer engineering standards, specifications and changes does not exceed two working weeks unless otherwise requested by the customer. (Refer Procedure no. WQP 4.2.3 for details)

4.2.4 Control of Records
Williams Controls has established and maintains a Procedure for controlling and maintaining records which includes provisions for their identification, storage, protection, retrieval, retention time, and final disposition.

Records maintained include those required by the customer, regulatory requirements and those identified by Williams Controls QEMS. All Employees are responsible for ensuring that records are complete, accurate, and legible. Storage methods used minimize potential damage, deterioration, or loss to the records being stored.

**4.2.4.1 Records Retention**

Records are indexed and grouped in order to be readily accessible and easily retrievable for employees and/or customers, as required. Electronic records are backed up using appropriate methods on specified intervals. Obsolete documents are clearly identified and may be retained for legal purposes or for knowledge preservation. Retention periods satisfy related regulatory and customer requirements. *(Refer Procedure no. WQP 4.2.4 for details)*

**5 MANAGEMENT RESPONSIBILITY**

**5.1 Management Commitment**

Williams Controls Management has established and maintains a Management Review system for reviewing the QEMS at planned intervals to ensure that it is and remains suitable and effective to meet the requirements of ISO/TS 16949:2009 and ISO 14000:2004 and that it supports the Williams Controls Quality and Environmental Policy.

This includes ensuring that customer, regulatory and legal requirements are understood and appropriately addressed. Quality and Environmental objectives and plans are established as needed and that the responsibilities of Quality and Environmental functions are clearly defined and understood.

Adequate training ensures our employee’s adherence to proven processes, procedures and total commitment to meeting and exceeding customer requirements along with maintaining an atmosphere in an organizational culture that fosters continual improvement.

Williams Controls Management Team makes provisions for the necessary resources and personnel to maintain the system, including Management Representatives, who ensure that the requirements of the QEMS are met.

**5.1.1 Process Efficiency**

The effectiveness of key processes are reviewed as part of Management Review and Quality Objectives topics. Key Processes are defined as follows are redefined each year.

**5.2 Customer Focus**

Williams Controls recognizes that identification and fulfillment of customer’s current and future needs is an essential factor in achieving customer satisfaction. Williams Controls has developed and implemented a New Product Introduction (NPI) Process to ensure customer requirements are determined and met prior to product delivery. This review includes an Engineering review as well as the review of delivery and regulatory requirements.
WCI has developed a procedure which identifies the environmental aspects the facility controls and over which it may be expected to have an influence, and determines which of those aspects are considered significant. These significant aspects are monitored as part of Williams Controls Environmental objectives.

WCI has established a procedure for the purpose of identifying, accessing and communicating legal and other requirements that are applicable to the facility and products.

Procedures provide the framework for assuring customer requirements are identified and communicated from the product's conceptual stage through design and into production. (Refer Procedure no. WQP 4.3.1 for details of Environmental aspect identification & Evaluation)

5.3 Quality and Environmental Policy

To clearly document its commitment to quality and the environment, the Management Team has adopted a Quality and Environmental policy that is relevant to Williams Controls organizational purpose. Based on the framework provided in the Quality and Environmental Policy, the Management Team has established measurable and consistent quality and environmental objectives and communicated these objectives throughout the organization. The Management Team periodically monitors and reviews the Quality and Environmental Policy within the Management Review process for continued suitability.
5.4 Planning

5.4.1 Quality and Environmental Objectives
WCI has determined and documented Quality and Environmental objectives and targets for relevant functions within the organization. Objectives and targets are developed and determined considering significant environmental aspects, technical options and financial, operational and business plans as well as the impact on applicable interested parties. These objectives are consistent with the Quality and Environmental policy, including the commitment to prevent pollution.

WCI establishes Environmental Management Programs as a means for achieving compliance, materials and utilities management and waste minimization objectives and targets. These programs define the principal actions to be taken, those responsible for undertaking the actions and the time frame in which they are to be achieved. New or modified developments are amended to ensure they are compliant to the Environmental Management System. (Refer Procedure no. WQP 4.0 for details)

5.4.1.1 Quality Objectives Supplemental
Quality objectives deployed are measurable and consistent with the quality and environmental policy. Where appropriate, applicable quality objectives and their measurements will be included in the business plan and used to support deployment of the quality policy.

5.4.2 Quality and Environmental Management System Planning
Quality Planning is done to ensure that product quality conforms to specified requirements. When required, Advanced Product Quality Planning (APQP) and Production Part Approval Process (PPAP) are followed and are developed utilizing cross-functional teams. The Management Team of Williams Controls ensures that the resources needed to achieve the quality objectives are identified, planned and maintained. Quality plans are documented and include: the required recourse, the processes of the QEMS, permissible exclusion and continual improvement of the QEMS.

When changes to the Quality or Environmental Management systems are planned and implemented, planning activities will ensure the integrity of the system is maintained.

5.5 Responsibility, Authority and Communication

5.5.1 Responsibility and Authority
The responsibility, authority, and interrelation of all personnel who manage, perform and verify work affecting the QEMS is defined and documented throughout system procedures and work instructions.

5.5.1.1 Responsibility for Quality
All personnel are instructed to promptly inform applicable supervisory or management personnel responsible for corrective action whenever a product or process fails to conform to requirements. Personnel assigned responsibilities for product quality have been given authority by the Management Team to stop production operations in order to correct Quality or Environmental problems.

5.5.2 Management Responsibility
The Management Team has appointed the Quality Manager as the ISO/TS 16949:2009 and ISO 14001:2004 Management Representative.
With this position comes the authority and responsibility for ensuring the QEMS is established, implemented, maintained and continually improved. The Management Representative represents the QEMS on the Management Team as its advocate. The Management Representative also promotes QEMS customer requirements, awareness and cooperation between Williams Controls departments and processes.
Customer representative

The Management Team has appointed the Quality Manager with responsibility as the Customer Representative. With this position comes the responsibility for ensuring the Customers’ needs are clearly understood and communicated to Williams Controls Product Line Teams. Sales Account Managers and Product Line Managers responsibilities also include, but is not limited to selecting special characteristics, Product Design and Development issues, Corrective and Preventive Actions as well as determining Quality and/or Training objectives on the Customers behalf. *(Refer Procedure no. WQP 4.0 for details & WQP 5.0 for Management Responsibility)*

5.5.3 Internal Communication

Managements approach to internal communication regarding the effectiveness of the QEMS is primarily through direct communication with employees. More formal communication may take place via documentation in a variety of methods. Williams Controls does not externally communicate its significant Environmental aspects at this time.

5.6 Management Review

5.6.1 General

Williams Controls has established and maintains a system for reviewing the QEMS at predetermined intervals to ensure that it is and remains suitable, adequate and effective to meet the requirements of ISO/TS 16949:2009 and ISO 14001:2004 and that it supports the Williams Controls QEMS Policy. Improvement opportunities and need for change, to include the quality and environmental policy and objectives are included. The Management System is documented, authority and responsibility are defined, and resources are allocated. *(Refer Procedure no. WQP 4.0 & 5.0 for details)*

5.6.1.1 Quality and Environmental Management System Performance

The Management Representative reports to the Management Team on the ongoing performance of the QEMS and the success of the company’s continuous effort to support the Quality and Environmental Policy and objectives. This reporting is done per the Management Review process. A summary of performance trends, including cost of poor quality and customer satisfaction, is prepared for Management Review.

The business plan includes details of Quality and Environmental objectives, Customer Satisfaction goals and benchmarking data. The Business Plan is reviewed and revised as needed.

The Management Representative maintains records of these reviews.

5.6.2 Review Input

A Management Review system has been established for the Management Team to evaluate the suitability, adequacy and effectiveness of the QEMS at planned intervals. Management review topics discussed meet the requirements listed in this QEMS, and are maintained as required.

Quality objective input data is typically presented as a performance trend. *(Refer Procedure no. WQP 5.0 for details)*

5.6.2.1 Review Input Supplemental
The Management review system also includes the analysis of potential field failures as part of the Nonconforming product topic that is included in the agenda requirements. This includes the impact on Quality, Safety, Customer Satisfaction and the Environment.

5.6.3 Review Output
Action items are issued during the course of a Management Review Meeting when an improvement is deemed necessary. These action items may be but are not limited to, a Process Improvement, Product improvement, QEMS improvement or resource needs. Decisions and/or actions related to improvements of the QEMS, its processes, and product conformance to customer requirements are included along with issues pertaining to needed resources.

6 RESOURCE MANAGEMENT
6.1 Provision of Resources
The Management Team is responsible for identifying and providing adequate resources necessary to support and continually improve the success of the QEMS. Resources can be defined as but not limited to personnel, equipment, supplies, and training.

The Management Team of Williams Controls ensures that the resources needed to achieve Customer Satisfaction and the Quality and Environmental objectives are identified and planned. Plans are documented and include the required resources, the processes of the QEMS, permissible exclusions, and continual improvement of the QEMS.

6.2 Human Resources
6.2.1 General
Williams Controls has established and maintains a procedure for identifying training needs and providing for the training of personnel performing activities affecting Quality and Environmental aspects of our products.

6.2.2 Competence, Awareness and Training
Management is responsible for reviewing job functions and defining training requirements. Individual Training requirements are outlined in Employee Training records for each person with respect to their specific job function.

6.2.2.1 Product Design Skills
Williams Controls identifies and ensures the applicable tools and techniques are available to employees with product design responsibilities. Training requirements ensure the employees competence to complete this task.

6.2.2.2 Training
Management is responsible for the identification and assessment of training needs of each employee. The effectiveness of training efforts is evaluated as a part of Management Review process and the Employee Training review process.
Records of training classes are maintained and serve as confirmation of a person’s ability to perform specific assigned tasks.

6.2.2.3 Training On The Job
Training at Williams Controls is partially on the job training due in part to the wide array of products our company provides. On the job training also provides training related to the QEMS. Explanations
of consequences to the customer, if requirements are not met, they are communicated via the Corrective Action procedure.

6.2.2.4  Employee Motivation and Empowerment
Williams Controls uses various methods to promote employee motivation. Management strives to motivate employees to achieve Quality and Environmental objectives, to make continuous improvements and to create an environment to promote innovation. The primary methods include utilizing Team Concepts, continuous improvement projects and encouraging overall employee involvement. (Refer Procedure no. WQP 6.2.2 for details of Training, Awareness & Competence)
6.3 Infrastructure
Management provides the facility and equipment needed for manufacturing and processing customer orders. Inspection and Test stations are present and available for electronic data gathering, as the customer order requires.

Supporting processes and services are available as needed.

6.3.1 Plant Facility and Equipment Planning
Process and Equipment planning consider the overall work plan including material handling, product flow, optimal use of floor space as well as the effectiveness of the operation. Plant layout, Facility and equipment plans are reviewed by area Managers using Lean manufacturing principles. Suggestions for improvement are brought to the attention of Management. Overall objectives are described within Williams Controls Quality and Environmental objectives.

6.3.2 Contingency Plans
A contingency plan exists as a documented procedure, which includes plans to protect the customer’s supply of production in the event of an emergency. (Refer Procedure no. WQP 4.4.7 for details of Emergency response)

6.4 Work Environment
The Management Team is responsible for identifying and providing the environment necessary to support the success of the QEMS and ensure that product conforms to requirements.

6.4.1 Personnel Safety to Achieve Product Quality
Personal safety is part of the required Training of each employee. A Safety Committee exists and meets at planned intervals. These meetings also include a plant walk thru to verify a safe environment and suggest needed improvements. Product design and development plans include the review of safety related requirements as part of the NPI process.

6.4.2 Cleanliness of Premises
Management is responsible for providing a clean and suitable work environment compliant with applicable government, regulatory, and industry standards.
7 NEW PRODUCT INTRODUCTION (NPI)

7.1 Planning of NPI

Williams Controls has established and maintains procedures to ensure that the sequence of processes New Product Introduction (NPI) is conducted in a controlled manner. Planning of NPI is consistent with other requirements of the organization's QEMS. Plans of NPI determine the following: quality objectives for the product, project or contract, the need to establish processes and documentation and provide resources specific to the product, verification and validation activities as well as the criteria for acceptability, the records that are necessary to provide evidence of conformity of the processes and resulting product. Project Plans are compiled to communicate the product requirements to appropriate personnel.

Multi-disciplinary Project Development Teams are responsible for managing and coordinating quality planning and manufacturing process development activities, and for developing Project plans. Core members of these teams include representatives from Design Engineering, Process Engineering, Production, and Quality Assurance.

The Quality Planning process is divided into six specific phases which encompass concept, design, prototype, pre-launch, validation, and production. The output of quality planning in every phase is documented for the applicable phase. Product plans define or reference product and process acceptance criteria; monitoring, verification and control activities and methods; and reaction plans to be implemented when acceptance criteria are not met. (Refer Procedure no. WQP 4.3.2 for details of spill prevention, control & countermeasure plans)

7.1.1 Planning of NPI-supplemental

Customer requirements and references to its technical specifications are included in NPI and Quality Planning.

7.1.2 Acceptance Criteria

Acceptance criteria for products are defined in the product design output documents, customer requirements, and other applicable specifications and regulations. These may be obtained from various engineering documents, such as drawings, design reviews, material standards, approved samples, computer-aided design (CAD) data, assembly requirements, etc.

Acceptance criteria for manufacturing process parameters and performance are defined in process design output documents, customer requirements, and other applicable specifications and regulations. These may be obtained from various process design documents, initial process studies, process setup and operator instructions, customer PPAP requirements, etc.

Acceptance criteria for products and processes are summarized and referenced in the control plans. Customer approvals are obtained as required. For attribute data sampling, acceptance level is zero defects.

7.1.3 Confidentiality

Williams Controls recognizes the importance of confidentiality with regard to customer-contracted products under development, and will ensure confidentiality of the development, testing and related product information.

7.1.4 Change Control
Product design changes are controlled through the Engineering Change Request process. For proprietary designs, changes are reviewed with the customer to ensure that any impact on form, fit and function are properly evaluated. Product and process changes are verified and/or validated as appropriate, and are evaluated with respect to their impact on Production Part Approval Process (PPAP) submission. All relevant submission items are updated as necessary. Where required by the customer, additional verification/identification requirements, such as those required for new product introduction, are met.

Changes to contracts, product and manufacturing processes are processed and communicated to affected areas.
7.2 Customer Related Processes

7.2.1 Determination of Requirements Related To The Product
Williams Controls has established and maintains a system for reviewing customer contracts and coordinating related activities. Quality Planning (NPI) steps include the review of delivery related activities, environmental impact, statutory and regulatory requirements.

For custom products, product requirements are determined and reviewed with regard to requirements specified by the customer; other relevant product requirements not specified by the customer, and the company’s capacity and capability to meet all applicable requirements.

7.2.1.1 Customer Designated Special Characteristics
Requirements for product characteristics are determined and reviewed in the process of developing the design of the product. Particularly relevant are design inputs from design reviews.

Product order requirements are determined related to specific orders. These include regulatory requirements relevant to customer’s operations and/or jurisdictions where the products will be used; environmental impact characteristics; delivery requirements; special packaging or handling requirements; and other such special customer requirements that do not pertain to the actual product specification.

For custom products, product requirements are determined and reviewed with regard to requirements specified by the customer; other relevant product requirements not specified by the customer, and the company’s capacity and capability to meet all applicable requirements.

7.2.2 Review of Requirements Related To The Product
Customer orders are reviewed before acceptance to ensure the requirements are clearly defined, documented, and mutually agreed upon, differences between the final contract and the proposal or quotation are reconciled and that Williams Controls is capable of fulfilling the agreed upon requirements.

7.2.2.1 Review of Requirements Related To The Product-Supplemental
Customer orders complete the requirement review process unless the customer has approved the waiver of review of requirements.

7.2.2.2 Organization Manufacturing Feasibility
When product design is included in the contract, determination and review of product requirements is actually carried out within the scope of determining and reviewing the design input. Where applicable, the manufacturing feasibility of the proposed products is investigated and confirmed by a multidisciplinary Project Team. The Team investigates whether the company will be able to meet requirements for product quality, delivery schedule, and capital equipment and tool cost. When required, Advanced Product Quality Planning (APQP) and Production Part Approval Process (PPAP) steps are followed, to include Feasibility studies, risk analysis and the FMEA process.

7.2.3 Customer Communication
Customer orders are communicated to all functions within the organization that may be affected by the customer requirements. Handling of order amendments are controlled to the same extent as the handling of initial orders. Amendments are reviewed to verify that the new or modified requirements can
be met, and a confirmation of acceptance is sent back to the customer. Incomplete or conflicting requirements are resolved with the customer before acceptance of the order. Williams Controls has determined and implemented methods for communicating with customers regarding product information, order related issues including amendments. Customer complaints are processed per the Corrective and Preventive Action procedures. Activities related to receiving, logging and processing customer feedback and complaints are documented per the Corrective and Preventive Action procedures.

7.2.3.1 Customer Communication Supplemental
Computer aided design (CAD) communication is available for customers who require communication via this method. When communicating with the customer, their prescribed format is used if required. (Refer Procedure no. WQP 4.3.1 for details of environmental aspect identification & evaluation procedure)

7.3 Design and Development

7.3.1 Design and Development Planning
Quality and Environmental System controls for design and development activities are applied to product design projects and to projects for designing and validating manufacturing processes. The application of the quality system to these two types of projects are further described in documented procedures. The Product Teams are responsible for the planning of design projects for product design, review, verification and validation for design and development of manufacturing processes, respectively. The plans identify and schedule design stages and activities; assign personnel; and define organizational and technical interfaces, and how they are controlled. Environmental procedures and plans include reactions to situations where their absence could lead to deviations from the Environmental System policies and objectives.

7.3.1.1 Multidisciplinary Approach
Product design and manufacturing process design activities are carried out by the multidisciplinary Product Teams. Planning includes the development, finalization and review of Special characteristics, FMEAs and Control plans. Responsibilities and authorities for Design Control are defined. The multidisciplinary approach and rules for setting up the Product Team are defined in the procedural level.

7.3.2 Design and Development Inputs
Design inputs for manufacturing processes include product design records, customer, functional and performance requirements, process capability and cost, and experience and data from similar processes. Statutory and regulatory requirements are also included.

7.3.2.1 Product Design Input
Procedures exist which describe the Formal design and planning techniques that are utilized. As required, Advanced Product Quality Planning (APQP) and Production Part Approval Process (PPAP) steps are followed. Feasibility studies are conducted to evaluate Customer requirements, process capabilities, costs and product design outputs. Knowledge from similar, previous products is also used when completing Feasibility studies.

7.3.2.2 Manufacturing Process Design Input
Manufacturing Design inputs include the identification, documentation and review of product design input and output data, customer requirements, productivity, process capability and cost, and experience and data from similar projects.

7.3.2.3 Special Characteristics
Special characteristics, whether identified by the customer’s special characteristic symbol, an equivalent symbol or notation to include process steps that affect special characteristics are identified on the Control plan. Also included are Process Control documents which include drawings, FMEAs and applicable operator instructions.

7.3.3 Design and Development Outputs
Design and Development outputs consist of documents defining the designed product or manufacturing process, including the supporting design calculations, analysis, etc. Design output documents are verified and approved before they are released for production and/or implementation. Design output documents are maintained and controlled as required.
7.3.3.1 Product Design Outputs-supplemental
Product Design output includes the documented verification and validation of product design inputs.

7.3.3.2 Manufacturing Process Design Outputs
Manufacturing design output data includes the verification and Validation of Product drawings/specifications, process flow charts, process FMEAs, Control plans, acceptance criteria and applicable work instructions. Data related to Quality, Reliability, Maintainability and Measurability are maintained. Error proofing activities take place as applicable and appropriate. Nonconformity reaction plans are shown on Control plans as a means of rapid detection. Nonconformities are addressed as per the Control of Nonconforming Product procedure.

7.3.4 Design and Development Review
Formal Design reviews for products and manufacturing processes are completed by multidisciplinary Teams. Reviews are performed and documented in accordance with planned intervals using a systematic process of review. At a minimum, the design reviews include an evaluation of the ability of the design and development results to meet input requirements, identification of problems and necessary actions.

7.3.4.1 Monitoring
Measurements at specified stages of design and development projects are defined, analyzed and reported as an input for Management Review.

7.3.5 Design and Development Verification
Designs and Developments are formally verified and documented to assure achievement of design requirements. Designs are verified by design reviews, alternative calculations, comparisons with similar proven designs, material testing and, when required, a prototype program.

7.3.6 Design and Development Validation
Designs are formally validated at planned intervals, to assure achievement and fitness of design requirements and intended application. Designs of manufacturing processes are validated by a production trial run and initial process studies. Requirements are determined and shown on the Control plan. Inspection reports and capability studies are completed as required. Data is compiled and provided to the customer. Customer part validation approval is obtained as required and records are maintained.

7.3.6.1 Design and Development Validation-supplemental
Design and Development activities are planned in accordance with the customer’s requirements and planned dates.

7.3.6.2 Prototype Programme
Prototype activities take place and requirements are documented on Control Plans, as requested by the customer. Whenever possible, the same suppliers, tooling and manufacturing processes will be used in production. Related activities are monitored and documented to assure timely completion and product conformance. WCI assumes responsibility for any outsourced services, if applicable.

7.3.6.3 Product Process Approval
Williams Controls supplies product and manufacturing process documentation in a format required by the customer. Once approved by the customer, the product is considered to be a Production part. This process also applies to Suppliers as applicable.
7.3.7 Control of Design and Development Changes
When required, Advanced Product Quality Planning and Production Part Approval Process are followed when processing Design and Development changes. Changes are reviewed, verified, validated and approved prior to implementation. Design and Development changes include the review of changes to related parts and products.

7.4 Purchasing

7.4.1 Purchasing Process
Purchasing procedures ensure that purchased raw materials, products, and services that affect customer requirements conform to specified requirements.

Suppliers are selected based on their ability to provide products and services that are appropriate and adequate to meet Williams Controls specifications and quality requirements. The degree of control exercised over a supplier’s selection and monitoring is dependent on the impact of that supplier’s products or services on Williams Controls final product and on the supplier’s performance history. For operational control at supplier end & subcontractor end the purchasing Dept. is responsible to monitor performance of supplier regularly.

7.4.1.1 Regulatory Conformity
Purchased products must meet regulatory requirements and government regulations, when applicable.

7.4.1.2 Supplier Quality Management System Development
Williams Controls has developed a Supplier Development Program that encourages suppliers to develop their Quality Management Systems using ISO/TS 16949:2009 as a guideline. Unless otherwise specified by the customer, all Suppliers are required to be ISO 9001: 2008 registered. Supplier status and performance is monitored and recorded.

7.4.1.3 Customer Approved Sources
A supplier can be added to the Approved Supplier List when designated by a customer as the required source for a specific product. Verification by a Williams Controls customer of purchased product or the use of a customer specified supplier does not absolve Williams Controls of the responsibility for the quality of the product or service provided by the Supplier.

7.4.2 Purchasing Information
Raw materials, products, and services are purchased from approved suppliers. Purchasing communication clearly describes the material, product, or service being procured including any QEMS requirements, inspection requirements, Personnel qualification requirements and delivery requirements. Purchasing documents are reviewed and approved prior to being released to the supplier.

7.4.3 Verification of Purchased Product
Product purchased is inspected upon receipt as required. Williams Controls or Williams Controls customer reserve the right to verify purchased product at the supplier’s premises and the details of the arrangements for such verification.

7.4.3.1 Incoming Product Quality
The receiving person is responsible for the inspection and verification of incoming materials. Incoming materials are not to be released to production prior to inspection and verification. The degree of inspection is dependent on the level of control exercised by the supplier and the supplier’s history.
7.4.3.2 Supplier Monitoring

Monitoring of suppliers includes tracking data with respect to delivery including premium freight costs, tooling, customer disruptions including field returns, quality, and accuracy issues. Any request for supplier corrective action is processed per the Corrective and Preventive Action Procedure.

Supplier monitoring data is maintained and compiled in the Management Review Records.

7.5 Production and Service Provision

7.5.1 Control of Production and Service Provision

Williams Controls has established and maintains a system for identifying and planning processes, which directly affect quality, and ensures that these processes are carried out under controlled conditions.

Production processes are directed in the manner and methods of manufacturing and quality through documented procedures, work instructions, and work orders. The ability of persons to perform specific job functions required to produce Williams Controls products is ensured per the Training, Awareness, and Competence Procedure.

As required, Advanced Product Quality Planning (APQP) and Production Part Approval Process (PPAP) steps are followed. Specific activities including monitoring special characteristics, that are required to produce products and ensure quality are identified and recorded on the Control Plan during the Quality Planning process outlined in the NPI Procedure.

Suitable Monitoring and Measuring devices are available and calibrated as required. The release, delivery and post delivery activities are further detailed in specific Procedures.

7.5.1.1 Control Plans

Details of specific customer and Williams Controls requirements are communicated to production personnel via the Control Plan. Details include materials needed, inspection and test criteria, methods and frequency of measurements, controls exercised over special characteristics and reaction plans should nonconformities occur.

Pre-launch Control plans are developed as required, taking into account manufacturing design FMEA outputs.

Controls are reviewed and updated as changes are made to the product, manufacturing processes, measurement or inspection criteria’s, logistics, supply sources or FMEA data.

Customer approval of the Control plan is obtained as required.

7.5.1.2 Work Instructions

Work instructions detail specific duties, manufacturing steps and activities necessary to do individual jobs and to satisfy the requirements of the related procedures and activities that impact product safety & quality.
7.5.1.3 Verification of Job Set-Ups
Verification of job set-ups and monitoring of manufacturing processes and product characteristics are conducted as required on the Control Plan. Product verifications take place after each set up. When required, Statistical Techniques are utilized.

7.5.1.4 Preventive and Predictive Maintenance
A procedure exists which describes the comprehensive predictive and preventive Maintenance program in effect for key process equipment. This program includes a schedule of maintenance activities, requirements for preservation of equipment.

7.5.1.5 Management of Production Tooling
Production tooling management includes tooling storage, maintenance, recovery and repair facilities; tool-change programs and tool set-up procedures; tooling design and design modification records; and tool status (production, repair, disposal, etc.) identification.

7.5.1.6 Production Scheduling
Production scheduling is order-driven. Production runs are scheduled to meet current customer orders rather than forecasts.

7.5.1.7 Feedback of Information From Service Agreement With Customer
WCI has established a system for communicating customers concerns to Manufacturing, Engineering and Design personnel.

7.5.1.8 Service Agreement with Customer
Servicing does not apply to Williams Controls at this time. Documentation and practices will be created as the need arises.

7.5.2 Validation of Processes For Production and Service Provision
Servicing does not apply to Williams Controls at this time. Documentation and practices will be created as the need arises.

Management is responsible for determining and providing suitable tools and equipment to manufacturing for the production of Williams Controls products. New equipment processes, or significant changes to existing equipment or processes, that affect quality, are identified and qualified by the Production Manager. This includes processes where deficiencies become apparent after the product is in use. Dates when changes become effective are recorded. Work Instructions, Control plans and required records are developed and supplied to personnel as needed.

7.5.2.1 Validation of Processes For Production and Service-supplemental
Validation takes place for processes for new equipment types used for production purposes.

7.5.3 Identification and Traceability
Manufacturing persons are responsible for inspection and testing of product throughout stages of the production process.

The traceability of raw materials is accomplished by lot identification that follows the material until consumed.
7.5.3.1 Identification and Traceability-supplemental

Product is clearly identified throughout all stages of NPI.

7.5.4 Customer Property

Williams Controls has established and maintains a system for controlling product, intellectual property, materials, tooling, returnable packaging or fixturing that is supplied by the customer and is directly incorporated into or for the manufacture of their end products.

Any Customer Supplied Product found to be damaged or otherwise unsuitable for use is processed per the Control of Non-Conforming Product Procedure and the customer is notified. Records are maintained per the Control of Nonconforming Product procedure.

If at any time, Customer Supplied Product is lost, the customer is notified.

7.5.4.1 Customer Owned Production Tooling

Customer supplied tooling or fixtures are permanently marked, as required so that ownership is visible.

7.5.5 Preservation of Product

Williams Controls has established and maintains a procedure for the identification, handling, storage, packaging, protection, and delivery of product.

7.5.5.1 Storage and Inventory

Materials, work in process, and finished goods are handled and stored in a suitable environment to prevent damage and deterioration. Procedures exist for the placing of materials or products into and the pulling of materials or products from inventory. An assessment of the condition of material and product in inventory, including the review of obsolete product is done at planned intervals. Williams Controls has an inventory management system with the objective of maximizing inventory turnover time and stock rotation.

7.6 Control of Measuring And Monitoring Devices

Williams Controls has established procedures to control, calibrate, and maintain inspection, measuring, and test (I M & T) equipment and software that meets the requirements stated in this QEMS manual.

7.6.1 Measurement Systems Analysis

When required by the customer, any measurement systems referred to in control plans are statistically analyzed to determine variation caused by the measurement system. The Systems Analysis Manual is used as a reference document for this process.

7.6.2 Calibration/Verification Records

Inspection, measuring, and test equipment calibration records, including the actual readings and the “as received condition”. Instances where I, M, & T equipment is found to be out of calibration or where non-conforming materials or products are identified as a result of equipment being used while out of calibration, are handled per the Control of Non-Conforming Product Procedure.

7.6.3 Laboratory Requirements

7.6.3.1 Internal Laboratory
Williams Controls maintain procedures and work instructions which describe Laboratory capabilities and activities.

7.6.3.2 External Laboratory
A qualified, accredited, independent laboratory service may be enlisted as needed.

The service provider ensures that environmental conditions are suitable for the services being performed. Providers are to be accredited to ISO/IEC 17025 or a national equivalent. (Refer Procedure no. WQP 7.6 for details for control of monitoring & measuring equipment)
8 MEASUREMENT, ANALYSIS AND IMPROVEMENT

8.1 General
Williams Controls has established and maintains a documented procedures to define, plan and implement the measurement and monitoring activities needed to assure conformity and achieve improvement. This includes the determination of the need for, and use of applicable methodologies including statistical methods.

Williams Controls has established and maintains a system for conducting inspection and testing to ensure that raw materials and products conform to specified requirements. Required inspections and tests, including any acceptance criteria, are specified in the Control Plan during the Quality Planning process.

8.1.1 Identification of Statistical Tools
The identification of need for applying statistical techniques to a manufacturing process is part of Quality Planning and done during the NPI process.

8.1.2 Knowledge of Basic Statistical Concepts
Knowledge of statistical techniques is addressed as part of the assessment of training needs and is indicated in Employee Training Records as required.

8.2 Monitoring and Measurement
8.2.1 Customer Satisfaction
Williams Controls has developed a Customer Survey that represents the overall customer base, to measure their satisfaction with Williams Controls products and services. The survey is performed at planned intervals with the results being analyzed as part of Management Responsibility.

8.2.1.1 Customer Satisfaction-supplemental
Customer Satisfaction data is compiled continually throughout the NPI process. This data includes: Delivery and Quality Performance, Customer Disruptions including field returns and Customer communications related to Quality or Delivery issues and instances of premium freight.

8.2.2 Internal Audits
Williams Controls has established and maintains a procedure for the planning and implementation of internal quality audits to verify that work activities comply with the documented QEMS and with the requirements outlined by ISO/TS 16949:2009 and ISO 14001:2004.

8.2.2.1 Quality and Environmental Management System Audit
Internal Audits are performed on a planned basis; with each element and process of the QEMS audited a minimum of once per year.

8.2.2.2 Manufacturing Process Audit
Manufacturing processes are included in the scope of Internal audits as it applies. Effectiveness is measured by comparison to the Quality objectives.

8.2.2.3 Product Audit
Product audits take place throughout the manufacturing process. Manufacturing process requirements are shown on the work order, work instructions and Control plan. Product conformity
is verified and dated by the responsible personnel prior to the product moving on to the next manufacturing process.

8.2.2.4 Internal Audit Plans
An Internal Quality Audit Schedule is established by the QEMS Coordinator at the beginning of each calendar year. Audits are performed on a predetermined basis; with each element of the QEMS audited a minimum of once per year. The audit schedule is prioritized by order of importance and by the status of the element.

8.2.2.5 Internal Auditor Qualification
Persons who perform Internal Quality Audits are Qualified Internal Auditors. Internal auditors are independent from the department or area being audited and free from bias. Auditors are trained on auditing techniques and the requirements of TS 16949 and ISO 14001.

8.2.3 Monitoring and Measurement of Manufacturing Processes
Williams Controls applies suitable methods for measurement and monitoring of those realization processes necessary to meet customer requirements. These methods confirm the continuing ability of each process to satisfy the intended purpose.

8.2.3.1 Monitoring and Measurement of Manufacturing Processes
Procedures describe activities to implement and control the application of the statistical techniques identified during the Quality Planning process. Specific product characteristics and statistical techniques applied to them are indicated on the Control Plan.

These methods confirm the continuing ability of each process to satisfy the intended purpose when planned results are not achieved, Corrective action will be taken as appropriate to ensure product conformity.

An Environmental Procedure exists which describes specific Monitoring and Measuring activities directly related to the Environmental Management System.

8.2.4 Monitoring and Measurement of Product
Williams Controls measures and monitors the characteristics of the product to verify that the requirements for the product are met. This is carried out at appropriate stages of the NPI process. Evidence of conformity with the acceptance criteria is documented. Records include the authority responsible for the release of product.

8.2.4.1 Layout Inspection and Functional Testing
Layout inspection and function verifications take place as required by the documentation shown on the Control plan. Results are maintained as the Control plan indicates.

8.2.4.2 Appearance Items
In the case of Customer parts designated as Appearance items, Williams Controls provides the appropriate resources including lighting for evaluation, master samples as required for color, grain, gloss, metallic brilliance and textures as appropriate.

Maintenance and Control of appearance masters, evaluation equipment and verification that personnel making these appearance evaluations are competent and qualified to do so.
<table>
<thead>
<tr>
<th>DOCUMENT NUMBER:</th>
<th>WQM-4.2.2</th>
<th>REVISION LEVEL:</th>
<th>J</th>
<th>DATE EFFECTIVE:</th>
<th>1/22/2013</th>
<th>DAF#</th>
<th>435</th>
</tr>
</thead>
<tbody>
<tr>
<td>Process Owner</td>
<td>Quality Manager</td>
<td>Department Manager</td>
<td>Quality Manager</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

This document is considered uncontrolled if printed. It is the user’s responsibility to verify current revision status prior to use.
8.3 Control of Nonconforming Product

Williams Controls has established and maintains a procedure for the identification, documentation, evaluation, segregation, and disposition of suspect and nonconforming products, materials and processes. Nonconforming Material Notifications (NCMs) are used to document and disposition non-conforming products and materials.

8.3.1 Control of Nonconforming Product-supplemental
Unidentified product or suspect status product is treated as nonconforming product and addressed per the Nonconforming Material Procedure.

8.3.2 Control of Reworked Product
Work instructions are provided for product that is to be reworked or repaired.

8.3.3 Customer Information
The customer is promptly notified in the event that Nonconforming material has been shipped.

8.3.4 Customer Waiver
When required, customer approval is obtained in order to ship products that include specification deviations. Packaging for products with deviations are clearly identified as such. Expiration dates and/or allowable quantities are recorded and tracked.

Any non-conforming materials or products identified as a result of tests or inspections are handled per the Control of Non-Conforming Product Procedure.

8.4 Analysis of Data

Williams Controls has determined measurable data, which is collected and analyzed as a means to demonstrate the ability and suitability of our QEMS. This data is monitored and reviewed and evaluated as part of the Management Review Process and is a primary guide tool towards continual improvement.

8.4.1 Analysis and Use of Data
Trends in Quality and operational processes are considered when comparing progress toward determined objectives. The Corrective and Preventive Action procedure is utilized to develop priorities for prompt solutions to customer related problems. Actions are also taken to determine key customer related trends, status of these trends, decision making related to these trends and longer term planning. Product usage is also considered.
This Data may also be used as a comparison with competitors and the applicable data related to competitors.
8.5 Improvement

8.5.1 Continual Improvement
Continuous Improvement is achieved and monitored through the practices of the Management Review Process, the Corrective and Preventative Action System Internal Audits as well as the objectives determined in Williams Control Quality Objectives. Manufacturing processes focus on the control and reduction of variation and product characteristics and process parameters. Controlled characteristics are documented on Control plans and monitored and maintained as the Control plan requires while attempting to reduce variation as much as possible during the manufacturing process.

8.5.2 Corrective Action
A corrective/preventive action procedure and system has been established to recognize non-conformities, identify root causes, prescribe necessary corrective actions, and evaluate the results of the corrections.

Corrective action can be proposed by anyone in the organization as a result of a customer complaint, a Non-Conformance Report, or an audit finding (internal or external). A Corrective/Preventive Action Report provides the format for the recording of the results of an investigation of root cause of non-conformity, the determination of the corrective action needed, and the evaluation of its application and effectiveness. When addressing a customer complaint, the format reflects the customer’s system, if required. Customer returns are analyzed and appropriate action is initiated. When applicable, corrective actions taken are applied to similar processes and products.

8.5.2.1 Problem Solving
Williams Controls has established and maintains procedures for implementing corrective and preventive actions utilizing a disciplined, problem-solving approach.

8.5.2.2 Error Proofing
When identifying Corrective Actions, error-proofing methods are used where applicable.

8.5.2.3 Corrective Action Impact
When applicable, corrective actions taken are applied to similar processes and products.

8.5.2.4 Rejected Product Test/Analysis
Williams Control analyses product rejected by the customer and works to minimize the cycle time of this process. CARs are initiated to prevent reoccurrence. Records are maintained as required.

8.5.3 Preventive Action
Preventive action can be proposed by anyone in the organization as a result of identifying an opportunity for preventing a product non-conformance, identifying an opportunity for process improvement, or as a result of an audit finding (internal or external). A Corrective/Preventive Action Report provides the format for the recording of proposed actions and the evaluation of their application and effectiveness.

A summary on the status of Corrective/Preventive Action Reports is provided for the Management Review of the QEMS. (Refer Procedure no. WQP 8.5.2 & 8.5.3 for details of NC actions including CA & PA)
<table>
<thead>
<tr>
<th>DOCUMENT NUMBER:</th>
<th>WQM-4.2.2</th>
<th>REVISION LEVEL:</th>
<th>J</th>
<th>DATE EFFECTIVE:</th>
<th>1/22/2013</th>
<th>DAF#</th>
<th>435</th>
</tr>
</thead>
<tbody>
<tr>
<td>Process Owner</td>
<td>Quality Manager</td>
<td>Department Manager</td>
<td>Quality Manager</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
9 SUPPORT FUNCTIONS
9.1 Support Functions
Williams Controls Portland (WCI) provides the following support functions to Williams Controls India (WCIPL):

- 7.1.4 Change Control
- 7.3 Design and Development
  - 7.3.1 Design and Development Planning
- 7.4.1 Purchasing Process – Supplier development
- 7.4.1.2 Supplier Quality Management System Development
- 7.6.3.1 Internal Laboratory