

 <b>Hanwha</b>	<b>SUPPLIER QUALITY ASSURANCE REQUIREMENTS</b>	Doc. Group	<b>SQAR</b>
		Doc. No.	<b>Q2000</b>

Rev. No.	Date	Description	Prepare	Review	Approval
0	2014.10.27	Initial Issue	NI Kim	SW Kim	YH Cho
1	2015.02.05	<b>Add Para 4.12.</b> Define the control of the supplier's traveller, planning, Tool/Fixture and CNC/CMM program	KH Jung	SW Kim	YH Cho
2	2015.07.13.	<b>Add Para 4.2.3</b> - Additional Q code requirement of SQAR <b>Amend Para 4.5</b> - Regulatory's authorities <b>Amend Para 4.7</b> - Control of subcontracting <b>Amend Para 4.10</b> - Technical data control process of supplier <b>Amend Para 4.11</b> - Tool & Fixture control number and grade <b>Add Para 4.13</b> - Requirement of record control in English <b>Amend Para 5.4.2</b> - Requirement of non-conforming products <b>Add Para 5.4.5</b> - NOE requirements <b>Add Para 5.5.5</b> - First Article Inspection Report(FAIR) requirements <b>Amend Para 5.6.1</b> - Requirement of production document approval <b>Add Para 5.7.5</b> - Exception process of source inspections <b>Amend Para 5.8.2</b> - Request for postponement of RCCA submission <b>Add Para 5.8.3</b> - Control of overdue submission of RCCA <b>Amend &amp; Delete Para 6.1.1, 6.1.2</b> - Consolidated and move to Para 6.1 <b>Delete Para 7 attachment 3</b> - [Attachment3] AS9102 FAIR Form 1, 2, 3	KH Jung	SW Kim	YH Cho

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3	2017.09.01.	<p><b>Amend Para 4.1</b> - Requirement of QMS establishment</p> <p><b>Amend Para 4.3</b> - Link to Para 5.10 Delivery requirement</p> <p><b>Amend Para 5.1 and subclause</b> - Requirement of international QMS certification  1) 5.1.1 System establishment requirement  2) 5.1.2 AS9100 certification requirement  3) 5.1.3 Non-certified supplier requirement</p> <p><b>Amend Para 5.5.4</b> - Requirement of First Article requirement</p> <p><b>Add Para 5.5.6</b> - Requirement of record and submission of FAIR</p> <p><b>Amend Para 5.6.1</b> - Requirement of production process approval</p> <p><b>Amend Para 5.6.2</b> - Requirement of record of inspection results</p> <p><b>Amend Para 5.7 and subclause</b> - Requirement of DQR and source inspection  1) 5.7.2 DQR qualification advantage  2) 5.7.3 Requirement of unqualified DQR  3) 5.7.4 Elimination of repeated requirement  4) 5.7.5 Deleted</p> <p><b>Amend Para 5.9</b> - Simplification of quality record control</p> <p><b>Amend Para 5.10.2</b> - Requirement of delivery documentations (Stipulate Group A &amp; B separation)</p> <p><b>Amend Para 6.2 Table</b> - Changes submission deadline added</p>	KH Jung	HC Lee	SW Kim

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## 1. Purpose

This requirements specifies quality assurance requirements for machining and assembling parts that are outsourced to the suppliers of Hanwha Corporation Aerospace Division(hereafter "Hanwha").

## 2. Scope

2.1 The outsourced items are classified according to the criteria below.

Classification	Type	Remark
<b>Group 2A</b>	Machining of Purchased Raw Materials and Assemble parts	* Turning/MCT/Grinding * Bearing Assembly, In-Process Assembly, Electrical Wiring
<b>Group 2B</b>	Precision Machining	* Grinding, Jig-Grinding, Honing

2.2 This requirements applies to the Suppliers and the subtiers of the suppliers when stated on the contracts or purchase orders.

### 2.3 Relations to other requirements

Suppliers shall meet all the requirements on the contract and are responsible for providing the relevant products and services to Hanwha. If the requirements on the contract do not conform to the this SQAR the priority shall be given to the requirements of the contract.

2.4 If the requirements on this SQAR cannot be met, the suppliers must notify Hanwha and discuss prior to signing the contracts and receiving the purchase orders.

2.5 Suppliers shall refer to the latest revision of this requirements. When the manufacturing cost increases as a result of revision of the requirements, the suppliers must notify Hanwha's purchasing department for discussion.

## 3. Applicable Documentations

### 3.1 Aerospace Standards

3.1.1 AS9100 "Quality Management Systems - Requirements for Aviation, Space and Defence Organizations"

🔗 Web site address: <http://www.sae.org/standardsdev/aerospace/hotaero.htm>

3.1.2 AS9102 "Aerospace First Article Inspection Requirement"

🔗 Web site address: <http://www.sae.org/standardsdev/aerospace/hotaero.htm>

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3.2 KDS0050-9000 "Defense Quality Management System Requirements for ROK Government"

☞ Web site address: <http://www.dtaq.re.kr>

3.3 Hanwha Engineering Documentations

Quality and engineering documentations applied on the drawings and specifications of the items found on the contract or purchase order.

#### 4. General Requirements

4.1 Suppliers shall confirm requirements stated in this document(SQAR) and establish a quality system which can ensure the requirements prior to provision of the products and services.

4.2 Additional Quality Assurance Requirements

Supplier shall meet the following quality requirements in addition to the quality assurance system specified in this document.

4.2.1 Quality assurance/inspection requirements specified on the drawing and specification of the product.

4.2.2 Quality assurance/inspection requirements stated on the relevant government policy and contract related documents.

4.2.3 Additional quality requirements(Q0000) stipulated in the purchase order with Q2000.

4.3 Suppliers shall perform inspection on all the products prior to its delivery, and the relevant reports shall be submitted to Hanwha. (Refer to Para 5.10)

4.4 Suppliers shall discuss all the engineering concerns which arise during the production with quality assurance team and manufacturing engineering team of Hanwha prior to starting any operation.

4.5 Hanwha and Hanwha's customers or regulatory agencies are authorized to evaluate suitability of the quality management system and the products on the site in order to approve them according to the requirements of the contract.

4.5.1 Suppliers shall provide quality records, equipments, and personnels required for such evaluation and verification.

4.5.2 Suppliers shall not utilize such verification method used by Hanwha as a means of accepting products.

4.6 Suppliers shall ensure that its employees are aware of all the quality assurance requirements and apply them to production of the relevant items.

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#### 4.7 Control of subcontracting

4.7.1 Suppliers shall not outsource and procure any items on the purchase order from Hanwha without any prior approval, and any violation to this could result in void of the contract and compensation of any incurred financial loss.

4.7.2 Suppliers shall confirm and guarantee the compliances of sub-contractors based on Hanwha SQARs such as production processes, quality assurance activities and its control. In addition, suppliers shall flow-down Hanwha SQARs to sub-contractors and get prior approvals from Hanwha in writing when they need to use any sub-contractors for outsourcing operations and procurements.

4.8 Suppliers shall acquire the inspection equipment/gauge required for production and inspection of the products ordered by Hanwha, but under reasonable circumstances Hanwha may provide the necessary equipment/gauge. However, Hanwha will have to verify possession of such equipment/gauge or availability of rental equipment/gauge to be used prior to providing such equipment/gauge.

4.9 Suppliers shall devise a proper means of preventing damage or loss of the inspection equipment/gauge rented from Hanwha. If any damage or loss occurs attributing to the suppliers, the suppliers shall reimburse for such damage/loss at their own cost.

4.10 Suppliers shall establish proper procedures to control and comply with all technical and engineering data(including digital data) which are provided by Hanwha and generated by suppliers. Unless otherwise requested by Hanwha, suppliers shall only use the latest and validated revision level, and apply them to each production exactly. If any technical and engineering data related to delivery items need to be changed, suppliers shall inform and discuss with Hanwha in advance.

4.11 Suppliers shall establish a procedure to control tools and fixtures including its numbers and grades. If there is the special tool or fixture, suppliers shall submit its control plan.

4.12 Supplier shall not change or revise Traveller, Planning, Tool/Fixture and CNC/CMM Programs that provided by Hanwha in any events. If supplier produces Flight Safety Part and Vital Part, supplier shall get an approval on all changes from Hanwha in advance to use each changed item. Furthermore, all records and documents on change process shall be kept properly.

4.13 If Hanwha especially requested based on the program/business, suppliers shall prepare all documents and records in English related to its production activities.

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## 5. Quality Assurance Requirements

### 5.1 Quality Management System Requirements

5.1.1 Suppliers shall establish quality management system that can comply the all the requirements of the Hanwha SQAR.

5.1.2 When contract/purchase order (between Hanwha and supplier or between Hanwha and Hanwha's customer) request, suppliers shall establish quality management system which can satisfy AS9100 requirements. After establishment of the QMS, supplier shall attain and maintain the certificate from certification body which is registered by IAOG.

☞ Web site address : [https://www.sae.org/?PORTAL\\_CODE=IAQG](https://www.sae.org/?PORTAL_CODE=IAQG)

5.1.3 Suppliers shall submit the plan in writing to get the AS9100 or ISO9001 certification and obtain conditional approval from Hanwha if supplier does not have any international quality management system certification or the certification is cancelled.

### 5.2 Purchase and Management of Raw Materials

5.2.1 Suppliers shall use only the raw material supplied by Hanwha to produce any products.

5.2.2. Suppliers shall establish a procedure to be used to keep the identification of the specification, serial number, and batch/lot number intact. The suppliers shall also record traceability information of the raw materials and verify it with the actual raw materials and parts before they are put into the production.

5.2.3 The remainder of raw materials furnished by Hanwha shall be returned to Hanwha when all the delivery requirement on the purchase order is completed.

### 5.3 Traceability Control

5.3.1 If a traveler is furnished to the supplier along with raw materials, it shall be maintained and controled together with the raw materials throughout the storage, production, and shipment.

5.3.2 Traceability control of materials and products are to be implemented throughout entire the production process. In any cases, even the mixture of different items and Batches/Lots shall be prevented. Hanwha can request the suppliers to compensate for any financial loss or aircraft accident attributing to mixture of different items and Batches/Lots.

5.3.3 Suppliers shall include traceability information in the delivery document package of the products.

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#### 5.4 Nonconforming Products Control

- 5.4.1 When nonconformance is found during a production process, suppliers shall identify, separate, and keep the nonconforming products in a bonded area or MRB crib only for nonconforming materials.
- 5.4.2 Suppliers shall establish a procedure to control the quarantined products. Where applicable, the root cause analysis and corrective actions shall be taken by suppliers to submit the nonconformance report to get its disposition from Hanwha. (Hanwha SRR form can be used)
- 5.4.3 It shall be ensured that no products with unapproved non-conformances are shipped to Hanwha.
- 5.4.4 Suppliers shall identify the scrap product by using engraving tools including part number, Job number and batch number. In addition, suppliers shall record and maintain the scrap list and submit the photograph of them if Hanwha requests.
- 5.4.5 NOE (Notification of Escape)  
Suppliers shall submit the NOE in writing including following items when any nonconformance is found in their processes or products and it affects products delivered to Hanwha already.
- 5.4.5.1 Defective processes or operations or products and its description
  - 5.4.5.2 Detail on the defects (Requirement, actual condition, etc)
  - 5.4.5.3 Serial numbers, Lot/Batch numbers
  - 5.4.5.4 Delivered quantities and each date
  - 5.4.5.5 Purchase order numbers or invoice numbers
  - 5.4.5.6 A signature of the representative (Quality Director or CEO) of the supplier

#### 5.5 First Article Inspection

- 5.5.1 Suppliers shall limit the first article lot quantity to be under 5S/S and quantity of units to be under total 20 units.
- 5.5.2 Suppliers shall perform a first article inspection on the items that are put into production process for the first time. Then they should fill out and submit the first article inspection report to Hanwha for approval. These items for which the FAIR is submitted, shall meet the requirements of the purchase order and the drawings.
- 5.5.3 If the final conditions of the products required on the drawing is not the same as the scope of outsourced process carried out by the suppliers, Hanwha can conduct first article inspection on this particular products when its own production process is completed. If the first article inspection is carried out by the suppliers, the first article inspection report shall be submitted with the products.

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[5.5.4 Suppliers shall deliver next production batches after getting an approval of First Article Inspection\(FAI\) from Hanwha.](#)

5.5.5 Suppliers shall comply with the latest revision of AS9102 during the first production run of each part number. The supplier's procedure of FAI shall be used in lieu of AS9102 after the approval of Hanwha by official documents.

[5.5.6 Suppliers shall record and maintain the FAIR documents, and provide Hanwha with duplicated documents of production record and reports including the FAIR for the first article delivery.](#)

## **5.6 Control of Process for Production, Inspection and Test**

[5.6.1 Suppliers shall prepare production documents \(travelers and process Layout Sheet\). If requested by Hanwha, supplier shall submit the documents to get an approval from Hanwha within 30 days after receipt of purchase orders or 7 days before implementing its production. Where applicable, suppliers shall discuss with Hanwha to use the production documents prior to its approval. Information of the relevant equipments, fixtures, and softwares shall be stated on these documents.](#)

[5.6.2 Suppliers shall conduct inspections for all products and maintain the inspection reports. If requested by Hanwha, suppliers shall submit the reports to Hanwha.](#)

5.6.3 The characteristics and measured data shall be indicated using the units required by the drawings.

5.6.4 Suppliers shall maintain and control the items being produced along with their travelers in order to verify and confirm the current status of the production and results of the performed inspections. Inspectors shall stamp on the travelers when each operation is complete.

5.6.5 Suppliers shall identify and properly store the products being produced in order to prevent mixture of the products between production processes.

5.6.6 Suppliers shall establish a procedure to prevent damage and corrosion during the production process and take proper actions accordingly when damage or corrosion occurs.

5.6.7 Quality inspection by suppliers shall be performed on the entire units. However, if a sampling inspection is to be performed, the suppliers shall propose the developed sampling methods and the process control plan and have them approved for application. A proper means of sampling shall be selected according to the specifications of ISO 2859, ANSI/ASQC Z1.4, and MIL-STD-105, and the selected sampling method shall be referred to for its approval.



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5.6.8 Suppliers are responsible for understanding and reducing variation between each production operations, and use of a statistic technique such as a control chart is recommended.

5.6.9 Suppliers shall perform self inspection and first off inspection on every batch for all the operations. Discrepancies of the batches shall be prevented by verifying and confirming the inspector's stamp and inspection records. Production of the remaining units may be carried out only the if the result of FAI is satisfactory.

### **5.7 Source Inspection and Support Quality activities**

5.7.1 Hanwha may send its own inspectors to the supplier's facility to carry out source inspections on the purchased products prior to shipment. The Supplier shall provide the necessary access, equipment and resources required to effectively accomplish the source inspection.

5.7.2 Suppliers shall deliver the source inspection products after the confirmation by a DQR(designated quality representative) who is certified by Hanwha. the DQR shall complete inspections and stamp or write his signature.

5.7.3 Suppliers shall submit a source inspection request to Hanwha to get an approval for the deliveries of each source inspection product if the supplier does not have DQRs.

### **5.8 Corrective and Preventive Action**

5.8.1 Suppliers shall carry out corrective and preventive actions in order to preclude reoccurrence of the same nonconformance and present the proof when requested by Hanwha.

5.8.2 Suppliers shall respond to the corrective action request issued by Hanwha in timely manner before the response due date and send result of the actions taken. If suppliers need more time to respond officially to Hanwha, suppliers shall submit a formal request in writing to extend the deadline in advance.

5.8.3 Hanwha can prohibit all deliveries of the supplier until the official response is received and its action is confirmed when the due date is expired over 15 business days without any notice or request.

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## 5.9 Quality Record Control

Suppliers shall retain quality records for at least 15 years and present the documents to Hanwha within the specified period of time upon its request. Suppliers shall get an confirmation from Hanwha QA when they want to discard any quality records of defence/military products.

## 5.10 Delivery

5.10.1 Suppliers shall devise a means of preventing damage and corrosion of products during their delivery by predicting various circumstances that may affect the conditions of the products.

5.10.2 The shipping documents that need to be enclosed with the products are as follows.

5.10.2.1 Certificate of Conformance ; C.O.C : [Group 2A & 2B](#)

- a) Name of Supplier
- b) Part Name/Part No.
- c) DWG No./Rev. No.
- d) Purchase Order No.
- e) Operation No.
- f) Quantity
- g) Attach Inspection reports ("Ex" Raw Material Inspection Sheet, Special

Process Inspection Sheet, Relevant Test Report)

[5.10.2.2 Traveller, Route Card, etc : Group 2A](#)

[5.10.2.3 Inspection Reports : Group 2A & 2B](#)

[5.10.2.4 FAIR \(First Article Inspection Report\) : Group 2A & 2B](#)

5.10.3 Suppliers shall not deliver any unauthorized copy, substitute and counterfeit products.

## 6. Responsibilities of suppliers

6.1 Suppliers shall report to Hanwha within 1 business day when any cancellation of accreditation on supplier's quality system issued by a 3rd party certificate authority.

6.2 Suppliers shall submit documented future actions for the following changes to Hanwha for discussion.

Classifications	Documents submitted	<a href="#">Submission</a>	Hanwha's Action
Change of Business Top Management	Result of Quality Impact Review	<a href="#">within 15 days after the change date</a>	Re-evaluation/ Re-approval based on review result
Change of Quality Organization/Director	Result of Quality Impact Review	<a href="#">within 15 days after the change date</a>	
Change of Plant Location	Result of Reviewing Impact on Quality System and First Article Inspection Plan	<a href="#">within 30 days in advance</a>	
Change of 4M	Plan to Reconduct First Article Inspection	<a href="#">within 15 days in advance</a>	

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**7. Required Forms and Records**

No.	Forms & Records	Document No.	Remark
Attachment 1	Certificate of Conformance (COC)	QC-SQAR-01-A	Supplier format can be used
Attachment 2	Supplier Rejection Report (SRR)	QC-SQAR-02-A	