



**Advanced
Innovative
Engineering**

Supplier Development Manual

Document Number: Q0079.4.10.09.20

(Document Not Controlled When Printed)

UNRESTRICTED Commercial in Confidence

Advanced Innovative Engineering UK Ltd

Unit 2, Ringway Industrial Estate, Eastern Avenue, Lichfield, Staffordshire, WS13 7SF

Registered in England and Wales – 08058103. VAT Number: 134306837

Tel: 01543 420700 | **Email:** mail@aieuk.com | **Website:** www.aieuk.com

Supplier Development Manual

1. Foreword

Competing in today's global market requires that products and services must be of high quality, delivered on time, with increasingly short lead times and at a competitive cost.

For AIE to be successful and meet the needs of our customers, we must have a process in place that encourages, supports and ensures our suppliers also meet quality expectations.

As the role played by our suppliers is crucial to our future success, we intend to involve suppliers as partners in our plans.

The objective of this manual is to define the basic system requirements that we will use and expect our suppliers to use to ensure that our mutual responsibilities for product and service quality are understood and implemented.

We look forward to your support as our partners and believe that by working together, we can develop our supply chain to the benefit of all.

AIE (UK) Ltd

Unit 2, Ringway Industrial Estate
Eastern Avenue, Lichfield,
Staffordshire, WS137SF

T: 01543 420700
W: www.aieuk.com
E: mail@aieuk.com

Company Number: 8058103
VAT Number: 134306837

Table of Contents

1.	Foreword	1
1.	Introduction	3
2.	Main AIE Contacts	4
3.	General Requirements	4
4.	Right of Access	4
5.	Notification of Organisation Changes	5
6.	Applicability	5
7.	Purchase Order Requirements	5
8.	Protection of information	5
9.	Code of Conduct	6
10.	Contingency Plans	6
11.	Accounts	6
12.	Supplier Quality System Requirements (8.4.1.1)	7
13.	Quality Management System (4.4)	7
14.	Management Responsibility (5.0)	8
15.	Resource Management (7.1)	8
16.	Control of monitoring and measuring devices (7.1.5)	8
17.	Operation (8.0)	8
18.	Design and Development (8.3)	9
19.	Purchasing (8.4)	9
20.	Supplier Quality Assurance Requirements (8.4.1.1)	9
21.	Production and service provision (8.5)	14
22.	Measurement, Analysis and Improvement (8.5.1)	16
23.	Foreign Object Debris – FOD (8.5.4b)	16
24.	Prevention of Counterfeit Parts (8.1.4)	17
25.	Obsolescence (8.1.4 Note)	18
26.	Control of Non-conforming product (8.7)	19
27.	Concession Application	19
28.	Inspection Criteria	19
29.	Corrective Action Report (10.2)	19
30.	First Article Inspection Report (F.A.I.R) (8.5.1.3)	20
31.	Supplier Assessment (8.4.2)	20
32.	Supplier Quality / Purchasing System Survey (Q0052)	21
33.	Supplier Audits (8.4.1.2 Note 2)	21
34.	Approved Supplier List (8.4.1.1 b)	21
35.	Definitions of Supplier Categories	21
36.	Supplier Management System (8.4.1.1 c)	22
37.	Forms / Documents	23
38.	Record Retention (8.4.3 k)	23
39.	Revision History	24
40.	Supplier Acknowledgement	25

AIE (UK) Ltd

Unit 2, Ringway Industrial Estate
Eastern Avenue, Lichfield,
Staffordshire, WS137SF

T: 01543 420700
W: www.aieuk.com
E: mail@aieuk.com

Company Number: 8058103
VAT Number: 134306837

Supplier Development Manual

1. Introduction

For AIE to succeed in a competitive global market, it is imperative that we develop close and open relationships with our suppliers, where mutual efforts support a continuous improvement environment. Increasingly stringent and demanding economic and quality requirements from the marketplace compel us to understand and continually improve our supplier base.

AIE's goal is to progress and expand our existing global base to become the world leader in our chosen market fields. To ensure we achieve this target, AIE has developed specific strategies that include:

- Long term relationships with fewer suppliers.
- Closer interaction between AIE's manufacturing, engineering, purchasing, quality personnel and those of our suppliers.
- Deployment of Advanced Product Quality Planning.
- Assure compliance to market specific requirements such as BS EN ISO 9001 and AS9100 and other customer and regulatory standards.
- Qualifying "special processes" against industry specific standards and qualifications for processes (such as welding).

To assist in the implementation of our objectives, AIE will utilise a Supplier Quality Assurance (SQA) programme, which embodies all the measures specified and mutually applied, between AIE and the supplier to obtain and maintain the high-quality standard required.

The development of Supplier Quality Assurance requires close collaboration between AIE and the supplier, and this necessarily involves an in-depth knowledge of the organisation and methods employed by the supplier. It equally requires the supplier to be familiar with the requirements when doing business with AIE.

This manual details the facilities and features of the supplier's quality system that will be assessed by AIE before the placing of new orders, and then the procedures to be followed by the supplier after orders have been placed.

Please remember that if there is any doubt regarding any of AIE requirements, then contact must be made during your Contract Review phase.

AIE (UK) Ltd

Unit 2, Ringway Industrial Estate
Eastern Avenue, Lichfield,
Staffordshire, WS137SF

T: 01543 420700
W: www.aieuk.com
E: mail@aieuk.com

Company Number: 8058103
VAT Number: 134306837

Supplier Development Manual

The SDM will also be the standard used to further develop existing relationships between AIE and its current approved supplier base in moving them towards preferred supplier status. The manual applies to all suppliers of manufactured components and also processing services to AIE at its manufacturing facility below:

Advanced Innovative Engineering (UK) Limited
 Unit 2, Ringway Industrial Estate,
 Eastern Avenue,
 Lichfield,
 WS13 7SF
 United Kingdom
 Tel: +44 1543 420700
 www.aieuk.com

AIE’s facility currently consists of design offices with development and test facilities, but future ambitions include the development of dedicated production facilities to manufacturing its Wankel-type rotary engines.

2. Main AIE Contacts

Department	E-mail Address
Engineering	PaulH@aieuk.com
Quality	matthewj@aieuk.com
Accounts	FathmaM@aieuk.com
Purchasing	PaulM@aieuk.com
Projects	CorrinaV@aieuk.com
Head of Ops	michaell@aieuk.com

Tel: 01543 420700

3. General Requirements

The following are mandatory General Requirements we expect our suppliers to fulfil.

4. Right of Access

Suppliers shall provide access to their premises and facilities for AIE, our customers and regulatory authorities for co-operation on product, process and business issues.

AIE (UK) Ltd

Unit 2, Ringway Industrial Estate
 Eastern Avenue, Lichfield,
 Staffordshire, WS137SF

T: 01543 420700
W: www.aieuk.com
E: mail@aieuk.com

Company Number: 8058103
 VAT Number: 134306837

5. Notification of Organisation Changes

Changes to the supplier's organisation that may affect its quality and financial health shall be notified to AIE as soon as possible. These changes may include; Company ownership, company name, company management, manufacturing location, quality approvals, significant changes to process or inspection techniques.

6. Applicability

All suppliers are to comply fully with the stated requirements of this manual. Individual waivers on certain elements may be granted at the discretion of AIE.

The supplier shall ensure that AIE's requirements stated herein are analysed, fulfilled, and flowed down internally and to its sub-tier suppliers as relevant. The Supplier is responsible for evaluating, selecting and monitoring its sub-tier Suppliers, including Special Processes and provide AIE with an Approved Supplier List (for the scope of supply) upon request.

Application for dispensation for any element of this manual is to be made in writing and presented to AIE who will action the request internally with the relevant function.

7. Purchase Order Requirements

The supplier shall adhere to all Purchase order Terms & Conditions plus stated special instructions. The PO is the governing document and will communicate any deviations to the requirements stated within this manual, the drawing, Engineering Specifications or other as authorised to the supplier. Any queries must be highlighted and reported to AIE, before the commencement of any work.

8. Protection of information

Any information the supplier receives from AIE must be kept confidential and never disclosed to any third party without the prior written agreement of AIE. The proprietary information can include but is not restricted to all versions of electronic data, drawings and documentation, tooling and materials. Under no circumstance is the supplier to make a direct approach to AIE's customers in relation to agreed business dealings. Any information received from AIE suppliers will be treated in the same manner. This protection of information is covered under the AIE Non-Disclosure Agreement. It is the supplier's responsibility to flow down all / any Non-Disclosure Agreements through the supply chain for all AIE contracts.

AIE (UK) Ltd

Unit 2, Ringway Industrial Estate
Eastern Avenue, Lichfield,
Staffordshire, WS137SF

T: 01543 420700
W: www.aieuk.com
E: mail@aieuk.com

Company Number: 8058103
VAT Number: 134306837

Supplier Development Manual

9. Code of Conduct

This code applies to AIE's entire supplier base and outlines the essential need for suppliers, their employees and sub-contractors to operate to the highest standards of business integrity in their relationship with AIE.

AIE wishes to work collaboratively with all suppliers to ensure proper understanding and compliance with this code of conduct. It is recognised that there are different legal and cultural environments in the countries that AIE's supply base operate within. However, this code of conduct sets forth the minimum requirements that all suppliers should meet in doing business with AIE.

Suppliers must ensure that all their employees are aware of their contribution to product conformity, product safety and the importance of ethical behaviour.

Suppliers must comply with all national and other applicable laws and regulations relating to the respective country of operation. Compliance includes ensuring that business transactions with AIE are fully reported/recorded, ensuring that their employees are aware and properly trained to meet the requirements.

AIE expects its suppliers to make proper provision for the health, safety and welfare of its people, visitors, contractors, customers and those in the community who may be affected by their activities.

Suppliers within the AIE supply base are expected to deal with AIE in a manner that avoids conflict between personal interests and those of the employer and AIE. This requirement applies equally to business relationships and individual activities.

10. Contingency Plans

Where appropriate, suppliers / sub-contractors are requested to understand all their company risks and prepare and submit a contingency plan which outlines disaster recovery options to ensure Quality and Delivery requirements are met in the event the following situations occur:

- Emergencies (Fire, flood, environmental incident)
- Utility supply interruptions
- Labour shortages
- Key equipment failure
- I.T Failure
- Adverse trading situations

Appropriate Insurance cover for the key points listed above should also be in place.

11. Accounts

To ensure smooth processing of invoice payments, all suppliers are requested to supply monthly statements.

AIE (UK) Ltd

Unit 2, Ringway Industrial Estate
Eastern Avenue, Lichfield,
Staffordshire, WS137SF

T: 01543 420700
W: www.aieuk.com
E: mail@aieuk.com

Company Number: 8058103
VAT Number: 134306837

Supplier Development Manual

Also and when applicable, where AIE rejects and returns product to a supplier with a Return-to-Supplier note. Then the supplier must issue a credit note and re-invoice when they re-deliver the parts to allow traceability of the goods and payment when due, based on the new delivery date. Our standard payment terms are 30 days month end (unless otherwise agreed), which loosely translated means all invoices issued in each month will be paid by the end of the following month.

12. Supplier Quality System Requirements (8.4.1.1)

AIE requires all suppliers to acknowledge and retain total ownership for the quality of their products and to develop Quality Management Systems as a minimum to ISO 9001 using an internationally recognised certification body (UKAS) which ensures that the requirements of the purchase order are fully met.

The development of these systems should provide for continuous improvement in product quality, leading to the attainment of zero defects, while also providing fast and effective corrective action in the event of defective products being delivered to AIE.

This Supplier Development manual is based on the requirements of the ISO 9001, AS9100 and important best practices from the IATF16949 standard with applicable paragraph sections identified.

Non-ISO approved organisations may be used at the discretion of AIE for development products but will be expected to demonstrate adequate management and controls of their processes that satisfy AIE's minimum requirements.

Recognised qualifications for special processes such as welding etc., may form part of contract requirements as deemed necessary.

AIE customer specific requirements may also form part of contract requirements when stipulated where AIE customer contracts apply.

13. Quality Management System (4.4)

The supplier shall establish and maintain a comprehensive, documented quality system that provides a means of ensuring that products conform to specified requirements. This system shall control the issue of drawings, specifications, procedures etc. Provision shall be made for the control of obsolete copies and their subsequent archiving and disposition.

The use of correction fluid is not permitted on any AIE related documentation. Any amendment shall be made by crossing out the error with a single line and initialling the change.

All records pertaining to quality shall be stored and maintained in a legible form for a minimum of 10 years. No records will be destroyed until authorised by AIE. Specific projects and regulatory bodies may require more extended retention periods, and this will be notified in advance to the supplier.

AIE (UK) Ltd

Unit 2, Ringway Industrial Estate
Eastern Avenue, Lichfield,
Staffordshire, WS137SF

T: 01543 420700
W: www.aieuk.com
E: mail@aieuk.com

Company Number: 8058103
VAT Number: 134306837

Supplier Development Manual

It is the responsibility of the supplier to ensure that it complies with all statutory, regulatory, health & safety and environmental requirements for the processes employed.

14. Management Responsibility (5.0)

The supplier shall make known a person to AIE, who will have the necessary authority and responsibility for product quality (Management Representative).

It is expected that the named person will provide evidence of the supplier's commitment to the development and implementation of the quality management system and continually improving its effectiveness.

15. Resource Management (7.1)

The supplier shall determine and provide the resources needed to maintain the quality management system and continually improve its effectiveness and enhance customer satisfaction by meeting AIE requirements.

Personnel performing work affecting product quality shall be competent based on appropriate education, training, skills, knowledge and experience. This competence will be defined and quantified with appropriate evidence. (7.2)

The supplier shall determine, provide and maintain the infrastructure needed to achieve conformity to product requirements. (7.1.3)

16. Control of monitoring and measuring devices (7.1.5)

All measuring and test equipment used to demonstrate conformance of product shall be calibrated with reference to international or national standards. Such equipment shall be clearly marked with identification of its calibration status, including the expiry date. Records of calibrated equipment shall be maintained. When equipment is found to be out of calibration, actions shall be taken to identify and rectify any affected product, including product already despatched.

17. Operation (8.0)

Orders or contracts shall be formally reviewed to ensure that the supplier has the technical, operational and logistical capabilities to meet the requirements. Any discrepancies or queries shall be resolved before the order or contract is accepted by the supplier.

Amendments to orders or contracts shall be formally reviewed. Records of contract review shall be maintained.

In particular, it is essential for all suppliers to inform AIE promptly when they may not meet the quality and delivery requirements at contract review and or at any time during the contract agreed.

AIE (UK) Ltd

Unit 2, Ringway Industrial Estate
Eastern Avenue, Lichfield,
Staffordshire, WS137SF

T: 01543 420700
W: www.aieuk.com
E: mail@aieuk.com

Company Number: 8058103
VAT Number: 134306837

Supplier Development Manual

18. Design and Development (8.3)

If Design activities are undertaken for AIE by the supplier, then design inputs and outputs shall be adequately specified (e.g. by relevant specifications). Formal documented design reviews shall be held at appropriate stages of design. Designs shall be checked by verification (theoretical check) and validation (practical check). All design changes shall be documented and approved by AIE authorised personnel before implementation.

19. Purchasing (8.4)

Suppliers shall not sub-contract any work awarded by AIE without prior consent from AIE.

The supplier should ensure that their subcontractors are evaluated and selected on their ability to meet specified requirements. A list of approved subcontractors shall be maintained. Purchasing documents shall clearly describe the relevant drawings including issue status and the quality requirements to be applied. All suppliers shall have a completed NDA in place at all times.

20. Supplier Quality Assurance Requirements (8.4.1.1)

Applicable to all Purchase Orders

- All items delivered shall be manufactured in accordance with applicable industry standards for good workmanship and shall be fit for purpose, in all respects.
- Packaging shall be of a standard, to prevent damage and deterioration during shipment and storage.
- Individual boxes must not exceed 25kg in weight; anything above this weight must be palletised and secured accordingly.
- Electrostatic sensitive items must be packaged to prevent static damage and conspicuously marked as static sensitive, including the documentation.
- Limited life Materials or articles having a definite characteristic of quality degradation with age shall be marked in a manner to indicate when the useful life will be expended, including the documentation.
- Products will not be accepted with less than 75% shelf life remaining.
- All suppliers shall ensure all work is carried out in a manner preventing Foreign Object Debris from contaminating the deliverables.
- Items with open orifices must be capped, bunged or packaged in a way to prevent contamination during storage and shipping.

The supplier shall use the quality codes and documentation submittal requirements for each shipment. Applicable requirements must be flown down to sub-tier suppliers. In the event, any requirement cannot be met, notify AIE purchasing immediately for clarification, direction and authorisation.

AIE (UK) Ltd

Unit 2, Ringway Industrial Estate
Eastern Avenue, Lichfield,
Staffordshire, WS137SF

T: 01543 420700
W: www.aieuk.com
E: mail@aieuk.com

Company Number: 8058103
VAT Number: 134306837

Supplier Development Manual

Please ensure that each PO is reviewed to realise the quality requirements that AIE stipulate per part, per shipment as they may differ from part to part

Codes QAR 1 to QAR 14 only applies when indicated on the Purchase Order.

QAR

QAR 1. Supplier Measurement Results

Under this code Suppliers shall provide with the delivered goods, results obtained in the course of inspection/testing listed against the requirements of the AIE Inspection Report / drawing (typically class 1 & CSI Parts). Such results shall be certified by a senior member of your staff responsible for Quality Assurance, and such certificate shall state the position or status of the signatory from within your Organisation. Certificates or Release Documents shall be provided with the relevant goods or materials and shall bear the complete purchase order number.

QAR 2. Certificate of Conformity

Under this code, each delivery of the product shall be supported by an appropriate Certificate of Conformity signed by a senior member of your organisation responsible for Quality Assurance / Inspection.

Certificates of Conformity provided must include but not be limited to the following information:

- AIE’s Purchase Order number. Supplier’s delivery note number.
- Drawing / Issue numbers and / or Specification / Issue numbers. Batch / Serial numbers.

A statement stating that the goods have been inspected and tested to drawings/specifications quoted in the order.

The goods conform in all respects to the requirements of the Purchase Order and have been manufactured and released under the scope of your QMS approval.

QAR 3. Source Inspection

All work under this code is subject to acceptance at the source at either 100% or random inspection. The supplier must notify the AIE 72 hours before the shipment is ready for inspection.

QAR 4. ADVANCED PRODUCT QUALITY PLANNING – (APQP).

All suppliers are encouraged to operate their project management systems in accordance with the automotive systems known as Advance Product Quality Planning (APQP), including the following elements:

1. Measurement systems analysis (MSA).	2. Sourcing decisions.
--	------------------------

AIE (UK) Ltd

Unit 2, Ringway Industrial Estate
 Eastern Avenue, Lichfield,
 Staffordshire, WS137SF

T: 01543 420700
W: www.aieuk.com
E: mail@aieuk.com

Company Number: 8058103
 VAT Number: 134306837

Supplier Development Manual

3. Pre-launch control plan.	4. Customer input requirements.
5. Operator work instructions.	6. Suppliers APQP status.
7. Packaging specifications.	8. Facilities, tools and gauges.
9. Production trials run.	10. Prototype build control plan.
11. Production control plan.	12. Prototype builds.
13. Preliminary process capability studies.	14. Drawings and specifications.
15. Production validation and in-process tests.	16. Team feasibility commitment.
17. Production part approval process (PPAP).	18. Process flowchart.
19. PSW part delivery	20. Process FMEA

There are several aspects of the APQP methodology that includes a Product Part Approval Process (PPAP), which is a requirement of AIE.

QAR 5. PRODUCT PART APPROVAL PROCEDURE – (PPAP).

A PPAP submission is required for ALL Initial sample part supplies, whether they are prototype or pre-production parts. Sample parts are those designated on the Purchase Order Requirements.

Unless the supplier has its own PPAP documentation. Then the AIE PSW and FAI forms shall be used in accordance with the following:

1. Level 1:
 - a. Part Submission Warrant (PSW).
 - b. Appearance Report.

2. Level 2:
 - a. All Level 1 Documents and the following:
 1. Parts.
 2. Initial Sample Inspection Report.
 3. Laboratory Reports (Material Analysis Certificates, including Mechanical Results).

3. Level 3:
 - a. All level 1 & 2 and the following:
 1. Process Flow Diagrams.
 2. Process Failure Modes Effects Analysis (PFMEA)
 3. Control Plans.
 4. Process Capability Studies.
 5. Gage R&R Studies.

AIE (UK) Ltd

Unit 2, Ringway Industrial Estate
 Eastern Avenue, Lichfield,
 Staffordshire, WS137SF

T: 01543 420700
W: www.aieuk.com
E: mail@aieuk.com

Company Number: 8058103
 VAT Number: 134306837

Supplier Development Manual

QAR 6. FAIR - First Article Inspection Report

FAIR's shall only be performed on production released parts unless otherwise specified. To determine the status of AIE drawing attention to the suffix on the drawing is required.

Drawings will always retain the prefix part number during the transition from development through to production. However, Development drawings are controlled with an alpha suffix (A, B, C etc.) whereas Production drawings are controlled numerically (1, 2, 3 etc.).

A FAIR is requested to be compiled in accordance with AS9102 FAI format; Documents other than those contained in AS9102 may be used; however, they shall contain all "Required" and "Conditionally Required" information and have the same field reference numbers. All fields shall be addressed but may be marked as "not applicable" (N/A) if appropriate. Blank fields are not acceptable! Each engineering design characteristic shall be checked by direct measurement with currently calibrated measuring devices. Results from inspection of design characteristics shall be expressed in quantitative terms (variables data) when a design characteristic is expressed by numerical limits. The results recorded shall be in the units specified on the drawing or specification. CMM reports for models must indicate points inspected, tolerances and actual measurements recorded must be included in the FAI report.

Attribute data (e.g., go/no go, accept, pass, etc) may be used if no inspection technique resulting in variables data is feasible. Attribute data is permitted when the design characteristic does not specify numerical limits (e.g., break all sharp edges, markings, etc). Every design characteristic and drawing requirement, including drawing notes, shall have its own unique characteristic number. The numbers shall be recorded on the ballooned drawing(s) adjacent to the characteristic in addition to the form. This ballooned drawing(s) must be part of the AIE package.

Material certification, NDT, treatments and finishing certification must be submitted as part of the FAI documentation package, detailing reference to any AIE drawing / Engineering Specification.

Any discrepancies or non-conformances discovered during the FAI shall be documented and actioned by the appropriate AIE authority. All rejection documentation, AIE's dispositions and corrective action shall become part of the FAI report.

Any NC's accepted at FAI shall be re-measured as a Delta FAI when the next batch is manufactured to demonstrate the corrective actions have been successfully applied.

All relevant material certification and special process certification must be included as part of the FAIR documentation package.

QAR 7. Raw Material Certification of Conformity

Base metal material certification should be in accordance with BS EN 10204 type 3.1. All materials must be supported with a traceable link through all stages of the supply chain back to the source.

QAR 8. Special Process Certification

AIE (UK) Ltd

Unit 2, Ringway Industrial Estate
Eastern Avenue, Lichfield,
Staffordshire, WS137SF

T: 01543 420700
W: www.aieuk.com
E: mail@aieuk.com

Company Number: 8058103
VAT Number: 134306837

Supplier Development Manual

Shall be submitted with each shipment to specify that all special processes or inspection methods, such as plating, anodizing, chemical conversion, heat treatment, non-destructive testing, destructive testing, subcontract laboratory analysis, demonstrate compliance with the drawing, specifications, or purchase order and are accomplished by approved source utilising approved equipment and personnel. The certificate must contain a reference to the AIE drawing/specification, where applicable. The certificate must contain a statement of conformity relating to the process completed and must be signed and dated by the responsible official on behalf of the processing organisation.

QAR 9. Material Safety Data Sheet

All potentially hazardous materials shall be accompanied by the relevant MSDS.

QAR 10. Acceptance Test Report

Test data to provide evidence of compliance with all acceptance test requirements as outlined in the applicable specifications. Test data shall be complete and shall cover all test and/or inspections performed and shall be traceable to the specific batch under test.

QAR 11. Calibration

Gauges, fixtures or equipment may be procured with the following certification required.

QAR 11a – Calibration traceable to National Standards

QAR 11b – UKAS calibration certification

QAR 12. Critical Safety Items

Parts manufactured and supplied under this code are identified as “CRITICAL” and have bespoke AIE control plans which must be adhered to.

Key elements of this programme include: -

- a) Suppliers shall not make any changes to the manufacture of CRITICAL parts.
- b) Identification of measurements methods and minimum measurement accuracies for critical characteristics.

Suppliers shall endorse the control plan reference and issue-level to which they have been manufactured on their outgoing Certificate of Conformity.

QAR 13. Commercial Automotive Parts

Certificate of Conformity to be produced if available.

QAR 14. Limited Life Materials

Limited life Materials or articles having a definite characteristic of quality degradation with age shall be packaged as follows: (Please note that the list is not exhaustive)

AIE (UK) Ltd

Unit 2, Ringway Industrial Estate
Eastern Avenue, Lichfield,
Staffordshire, WS137SF

T: 01543 420700
W: www.aieuk.com
E: mail@aieuk.com

Company Number: 8058103
VAT Number: 134306837

Supplier Development Manual

Best practice methods and OEM guidance to be utilised during handling and packaging that ensures that part integrity is not compromised.

Products will not be accepted with less than 75% shelf life remaining.

Part Description	Packaging requirement
Drive belts	To be packed within UV resistant bags and placed within individual boxes clearly identified with the AIE part number, revision level and marked in a manner to indicate when the useful life will be expended (cure date & shelf life).
Oil Seals	
Flexible Couplings	
Heat Shrink Tubing (Spool)	
Fluran Tubing (Spool)	
Silicone hoses (Ram pipes, water pipes)	
Gaskets	That are manufactured from the same batch can be packaged in quantities of 10 per UV bag. Each UV bag to be placed within boxes clearly identified with the AIE part number, revision level and marked in a manner to indicate when the useful life will be expended (cure date & shelf life)..
O rings	
AV Mounts	
Diaphragms	
Plus other life-limited parts	

21. Production and service provision (8.5)

Any product supplied by AIE for incorporation into assemblies by the supplier shall be suitably verified and controlled. If any customer (AIE) property is lost, damaged or otherwise found to be unsuitable for use, this shall be reported to AIE and records maintained.

The status of material and product shall be clearly identified by suitable means throughout product realisation.

The Supplier’s quality control documents shall contain as a minimum the following information:

- To be able to demonstrate the conformity of the product and that all process operations have been completed.
- Accountability for all products (part quantities, split batches, non-conformances, etc.).
- Detail any differences between the actual product configuration and the agreed configuration.
- Cross-references to related documents, i.e. drawings, purchase order, specifications.
- Maintain issue control status between the drawing and all manufacturing control documentation, i.e. job cards, route cards, operator instructions.

AIE (UK) Ltd

Unit 2, Ringway Industrial Estate
 Eastern Avenue, Lichfield,
 Staffordshire, WS137SF

T: 01543 420700
W: www.aieuk.com
E: mail@aieuk.com

Company Number: 8058103
 VAT Number: 134306837

Supplier Development Manual

- If applicable contain correct part serial numbers - avoiding duplication. Strict control over the traceability of product via serial number shall be maintained at all times. When a product is scrapped, the serial number shall under no circumstances be transferred to a substitute part.

The supplier shall preserve the conformity of product during internal processing and delivery. This preservation shall include identification, handling, traceability, packaging, storage and protection. (8.5.4)

Manufacturing processes shall be defined by documented procedures. Acceptance criteria for quality shall be defined in a clear and practical manner. Where processes cannot be verified by subsequent inspection or testing, such processes shall be performed by qualified operators or have suitable process control parameters established. All process controls shall be submitted to AIE when requested, and any changes to the process shall be advised to AIE prior to making any such change.

When applicable, the supplier should clearly identify the date of expiry/shelf life and cure date of perishable/consumable items.

Where parts are classified as Key / Critical / Traceable (any air vehicle part assembly, or installation containing a critical characteristic part whose failure, malfunction or absence may cause a catastrophic failure resulting in the loss or serious damage to the air vehicle) suppliers shall apply additional controls when manufacturing such parts. The manufacturing processes shall be 'frozen' upon approval of the initial F.A.I.R and shall not be modified or changed without prior permission from AIE. Critical Items parts are subject to Control Plans agreed between AIE and AIE's customer.

Suppliers of Critical Items shall provide a completed GII (Inspection Report) which will be sent out with each Purchase Order from AIE. This document details all features that we require specific inspection on. The GII also requires the supplier to reference all relevant Certificates for all deliveries. Failure to provide a completed GII will result in the parts not being booked in and payment being delayed.

For base material, the certificate should be as per BS EN 10204 type 3.1

Certificates of Conformity provided will include but not be limited to the following information: -

- AIE's full order number
- Supplier's delivery note number.
- Drawing/Issue numbers and/or Specification/Issue numbers.
- Batch/Serial numbers.
- A statement confirming the following:
- "The goods have been inspected and tested to drawings/specifications quoted in the purchase order. The goods conform in all respects to the requirements of the purchase order" (8.6).

AIE (UK) Ltd

Unit 2, Ringway Industrial Estate
Eastern Avenue, Lichfield,
Staffordshire, WS137SF

T: 01543 420700
W: www.aieuk.com
E: mail@aieuk.com

Company Number: 8058103
VAT Number: 134306837

22. Measurement, Analysis and Improvement (8.5.1)

Monitoring and Measurement of product.

The supplier shall monitor and measure the characteristics of the product to verify that the product requirements have been met. This shall be carried out at appropriate stages of the product realisation process in accordance with the planned arrangements.

23. Foreign Object Debris – FOD (8.5.4b)

The Supplier is required to establish and maintain a Foreign Object Debris/Damage (FOD) prevention program that employs appropriate housekeeping practices to assure timely detection and removal of residue/debris generated, during operations and normal daily tasks.

All circuit board assemblies and closed units must be inspected for foreign object debris/damage or FOD.

The supplier shall ensure that Foreign Objects and subsequent Foreign Object Damage (FOD) is eliminated from all parts prior to shipment. All suppliers must maintain a FOD free environment during machining, manufacturing, assembly, maintenance, inspection, storage, packaging and shipping. A program in compliance with NAS412 REV. 2 and SAE-AS9146 will meet the AIE requirements.

Potential FOD includes but is not limited to burrs, chips, dirt, corrosion and contamination resulting from the manufacturing, assembly, maintenance, processing, cleaning, storage and subsequent packaging of parts.

Suppliers must ensure all passageways – cast and/or machined are clear of chips, core material, dirt, creakout of cast walls, etc.

Prior to closing inaccessible or obscured areas and compartments during assembly, supplier shall ensure the areas are free of FOD.

Suppliers must ensure all parts are clean and FOD free prior to shipment.

Suppliers are required to maintain a FOD prevention program, which includes prevention and elimination of FOD from the manufacturing processes and work area.

Specific attention should be given, where applicable, to items such as:

- Housekeeping
- Food and beverage control
- Tool and small part accountability

AIE (UK) Ltd

Unit 2, Ringway Industrial Estate
Eastern Avenue, Lichfield,
Staffordshire, WS137SF

T: 01543 420700
W: www.aieuk.com
E: mail@aieuk.com

Company Number: 8058103
VAT Number: 134306837

Supplier Development Manual

- Loose objects
- Material handling and parts protection
- External cleaning following evidence of external contamination

Supplier shall ensure that the responsibility for the FOD prevention program is clearly defined and appropriate personnel have received FOD awareness training.

Suppliers are responsible for flow down of these requirements to their sub tier suppliers to ensure FOD free products.

Suppliers FOD prevention program and controls are subject to periodic audits by AIE as deemed necessary to ensure program effectiveness and compliance. This includes, but not limited to, Failure Analysis Reports, Containment and Preventive Corrective Action Plans taken to preclude recurrence. These reports shall be made available and submitted upon request through formal notifications.

For additional information regarding FOD prevention, refer to National Aerospace Standard NAS 412, "Foreign Object Damage/Foreign Object Debris (FOD) Prevention" and AS9146 "Foreign Object Damage Prevention Program".

24. Prevention of Counterfeit Parts (8.1.4)

The supplier shall plan, implement and control processes, as appropriate to their organisation and the product, for the prevention of counterfeit or suspect counterfeit parts and material use and their inclusion in products delivered to AIE.

Counterfeit parts and material affects all supply classes, including but not limited to; Electrical, Electronic and Electromechanical (EEE) parts, raw materials, hardware, fasteners, valves, bearings, castings, epoxies, paints, lubricants, adhesives, refrigerants, batteries etc.

"Counterfeit Work" means work that is or contains parts and material misrepresented as having been designed and/or produced under an approved system or other acceptable method. The term also includes approved work that has reached a design life limit or has been damaged beyond possible repair, but is altered and misrepresented as acceptable.

Suppliers must ensure that Counterfeit Work is not delivered to AIE.

Suppliers shall only purchase items to be delivered or incorporated as Work to AIE directly from the Original Component Manufacturer (OCM) / Original Equipment Manufacturer (OEM), or through an OCM / OEM authorized distributor chain.

Train all affected personnel (e.g., program management, purchasing, inspection, test, production, engineering, quality, and repair) in the prevention, detection, containment, reporting, and disposition of Counterfeit Work, to mitigate risk in the supply chain.

AIE (UK) Ltd

Unit 2, Ringway Industrial Estate
Eastern Avenue, Lichfield,
Staffordshire, WS137SF

T: 01543 420700
W: www.aieuk.com
E: mail@aieuk.com

Company Number: 8058103
VAT Number: 134306837

Supplier Development Manual

Work shall not be acquired from independent distributors or brokers (these are suppliers that do not have a contractual agreement with the original manufacturer) unless approved in advance in writing by AIE.

Suppliers shall immediately notify AIE with the pertinent facts if they become aware or suspect that they have furnished Counterfeit Work. When requested by AIE, the supplier shall provide OCM / OEM documentation that authenticates traceability of the affected items to the applicable OCM / OEM.

In the event that Work delivered under contract constitutes or includes Counterfeit, the supplier shall, at its expense, promptly replace such Counterfeit Work with genuine Work conforming to the requirements of the contract.

The supplier shall be liable for all costs relating to the removal and replacement of Counterfeit Work, including without limitation AIE costs of removing Counterfeit Work, of reinserting replacement Work and of any testing necessitated by the reinstallation of parts Work after Counterfeit Work has been exchanged.

The supplier shall include the requirements of this section or equivalent provisions in lower tier subcontracts for delivery of items that will be included in or furnished as Work to AIE.

The supplier shall establish and maintain a Counterfeit Parts and Material Prevention program and process to prevent the delivery of Counterfeit Parts and Material to AIE. Please see Reference Industry Standard AS-5553 and AS-6174 as a guideline.

25. Obsolescence (8.1.4 Note)

For component parts (COTS) or AIE designed parts or assemblies, the Supplier shall notify the AIE Buyer regarding part or material obsolescence as soon as the information becomes available, with an expectation to provide notification at least six months prior to the last date an order will be accepted. AIE requires sub-tier/subcontract suppliers to manage obsolescence on the assemblies where they own the design.

For products where the Supplier has design responsibility, the Supplier shall develop and implement a Part Obsolescence Management Process. This Process shall include the following elements at a minimum:

- Annual assessment of Product Bill of Material(s) (BOMs) to identify any obsolescence that will potentially impact delivery of product to AIE
- Proactive identification and detection of part, material or manufacturing/test equipment obsolescence issues
- Action Plan to resolve each obsolescence issue, including forecast analysis and product support decision(s) (i.e. Life Time Buy, redesign or product sunset)

AIE (UK) Ltd

Unit 2, Ringway Industrial Estate
Eastern Avenue, Lichfield,
Staffordshire, WS137SF

T: 01543 420700
W: www.aieuk.com
E: mail@aieuk.com

Company Number: 8058103
VAT Number: 134306837

Supplier Development Manual

- Life Time Buy inventory management plan to ensure long term ability to produce product
- Advanced notification to the AIE buyer of any potential interruption in the ability to meet AIE forecasted demand due to an obsolescence issue

26. Control of Non-conforming product (8.7)

The supplier shall ensure that products, which do not conform to product requirement, are identified and controlled to prevent their unintended use or delivery. The controls and related responsibilities and authorities for dealing with nonconforming product shall be defined in a documented procedure. Nonconforming products that are received by AIE will be processed by our rejection procedure, and the supplier may be liable for non-conformance administration costs. The supplier accepts the principle of such reasonable administration costs and the processing of debit notes where Nonconforming goods are identified after invoices have been paid.

27. Concession Application

Suppliers must submit a concession request (including a full RCCA plan), prior to shipping non-conforming material to AIE. The request shall be for non-conforming material deemed fit for use, that however does not meet the drawing and/or stated specifications. The supplier shall properly identify non-conforming material accepted by the concession. Repeated applications for the same non-conformance or re-use of existing Concession will not be accepted, and a corrective action / preventative action will be required for every concession granted. Please be aware Concessions will affect your vendor score. All concessions will be identified against a specific purchase order or designated batch within AIE.

28. Inspection Criteria

The criteria of each inspection level are either GII or FAIR.

29. Corrective Action Report (10.2)

AIE maintains a comprehensive system for the recording, monitoring and measurement of corrective actions. This system applies to both internal and externally generated concerns. In the event of a non-conformance, the supplier will be required to complete a Corrective Action Report. Root cause analysis shall be conducted to determine the cause of the non-conformance. The supplier shall complete the containment actions within 48 hours of receipt of issue and a target of 30 working days for complete closure. Supplier shall provide documented evidence of actions to prevent re-occurrence; this should be documented using an agreed format with AIE. Please be aware that failing to adhere to the targets will affect your vendor score.

AIE (UK) Ltd

Unit 2, Ringway Industrial Estate
Eastern Avenue, Lichfield,
Staffordshire, WS137SF

T: 01543 420700
W: www.aieuk.com
E: mail@aieuk.com

Company Number: 8058103
VAT Number: 134306837

30. First Article Inspection Report (F.A.I.R) (8.5.1.3)

The supplier shall provide a First Article Inspection Report (FAIR); this is required for the first batch produced from a new or modified drawing - after a change of the manufacturing process - as directed by AIE purchase order - a lapse in production for two years - as specified by the Customer. A First Article Inspection is a representative sample from the batch, which shall be 100%, inspected for conformance to dimensional, mechanical and/or performance requirements.

For all products: AS9102 FAI paperwork format accepted, both Excel / Word formats are acceptable. Forms other than those contained in AS9102 may be used; however, they shall contain all "Required" and "Conditionally Required" information and have the same field reference numbers. All fields shall be addressed but may be marked as "not applicable" (N/A) if appropriate. Every design characteristic and drawing requirement, including drawing notes, shall have its own unique characteristic number. The numbers shall be recorded on the ballooned drawing(s) adjacent to the characteristic in addition to the form. This ballooned drawing(s) must be part of the AIE package.

Each engineering design characteristic shall be checked by direct measurement with currently calibrated measuring devices. Results from inspection of design characteristics shall be expressed in quantitative terms (variables data) when a design characteristic is expressed by numerical limits. The results recorded shall be in the units specified on the drawing or specification and shall be checked with currently calibrated measuring devices. CMM reports for models must indicate points inspected, tolerances and actual measurements recorded must be included in the FAI report.

Attribute data (e.g., go/no go, accept, pass, etc.) may be used if no inspection technique resulting in variables data is feasible. Attribute data is permitted when the design characteristic does not specify numerical limits (e.g., break all sharp edges, markings, etc.).

Any discrepancies or non-conformances discovered during the FAI shall be documented and actioned by the appropriate AIE authority. All rejection documentation, AIE's dispositions and corrective action shall become part of the FAI report.

Any NC's accepted at FAI shall be re-measured as a Delta FAI when the next production is manufactured to demonstrate the corrective actions have been successfully applied.

31. Supplier Assessment (8.4.2)

Method of Assessment

AIE requires that suppliers must conform to one of the following controls.

The supplier has completed AIE Supplier Quality Purchasing System Survey (Q0052) or an equivalent supplier generated document that captures the requirements of AIE's Q0052.

The suppliers Quality System will have been assessed and approved by AIE's.

AIE (UK) Ltd

Unit 2, Ringway Industrial Estate
Eastern Avenue, Lichfield,
Staffordshire, WS137SF

T: 01543 420700
W: www.aieuk.com
E: mail@aieuk.com

Company Number: 8058103
VAT Number: 134306837

Supplier Development Manual

The supplier may be registered as a BS EN ISO 9001 and/or AS EN 9100 approved organisation. Albeit for certain customer programs, this will be mandatory. AIE will specify this on the purchase order.

A fully signed and completed NDA will also be required.

AIE reserves the right to review/revoke approval at any time and thus terminate business dealings.

32. Supplier Quality / Purchasing System Survey (Q0052)

All potential new suppliers must complete the Q0052. The blank form will be forwarded by AIE.

The purpose of the questionnaire is to give an initial overview of the supplier's organisation.

After the completed questionnaire has been evaluated by AIE purchasing, a decision will be made as to the level of approval to be granted. This is based on the requirement for any further action such as assessment of the supplier's quality system

33. Supplier Audits (8.4.1.2 Note 2)

On-site audits may be conducted as part of the initial introduction as a new supplier. The decision to audit a newly identified supplier depends on how many aspects such as criticality of supply, approvals held, location and financial implications. Notification of any planned audits will be given well in advance.

As part of AIE's Supplier Development programme and supplier control process, all Approved Suppliers may be subject to an ongoing Supplier Verification Audit. Selected Suppliers will be audited as necessary to verify product conformance. These audits may be made up of a cross-functional team consisting of procurement, quality and production staff. The purpose of a cross-functional team is to substantiate the effectiveness of the supplier's administration, manufacturing and quality system.

34. Approved Supplier List (8.4.1.1 b)

AIE operates a controlled "Approved Supplier List" which consists of all suppliers approved to supply products/services to AIE. These are broken down to preferred and standard suppliers.

35. Definitions of Supplier Categories

Manufacturing Resource Supplier - A supplier of materials, sub – contract processes, components and tooling, typically used in the direct manufacture of finished goods.

General Supplier - A supplier of indirect services, consumables, maintenance and other items, which typically indirectly support the manufacture of finished goods.

AIE (UK) Ltd

Unit 2, Ringway Industrial Estate
Eastern Avenue, Lichfield,
Staffordshire, WS137SF

T: 01543 420700
W: www.aieuk.com
E: mail@aieuk.com

Company Number: 8058103
VAT Number: 134306837

Supplier Development Manual

36. Supplier Management System (8.4.1.1 c)

AIE operates a SMS to monitor and measure the performance of all Manufacturing Resource Suppliers. The process is an ongoing, comprehensive supplier monitoring and feedback procedure that allows AIE to communicate with its supplier base, recognising both high performance suppliers, as well as low performing suppliers.

Quarterly period performance reports are issued to a determined quantity of suppliers selected by: performance, criticality of supply, expenditure, newly approved suppliers.

Information for all suppliers is available on request from AIE Quality Department.

The following indices have been established as counting measures used to measure the supplier's performance:

Quality Indices (50% of overall score)

- Number of Rejections
- Overdue Corrective Action responses
- PPM (Parts per million) score

PPM levels for product quality will be calculated using the following formula:

$$\frac{\text{No of defective parts}}{\text{No of parts received}} \times 1,000,000$$

Delivery Indices. (50% of overall score)

- 100% On Time Delivery is required with the correct quantity, correct paperwork, and correct packaging during the contract term.

Any costs associated with a supplier's lack of meeting AIE's delivery and quality requirements will be charged back to the supplier. These costs may include:

- Down time
- Containment
- Sorting
- Supervision
- Rework
- Premium Freight
- Delivery Issues

AIE (UK) Ltd

Unit 2, Ringway Industrial Estate
Eastern Avenue, Lichfield,
Staffordshire, WS137SF

T: 01543 420700
W: www.aieuk.com
E: mail@aieuk.com

Company Number: 8058103
VAT Number: 134306837

Supplier Development Manual

Any supplier that does not maintain acceptable performance requirements in any of the above established measurables will be invited to present to AIE's Quality and Purchasing functions, an action plan stating the supplier's intentions to show significant improvement towards meeting the required measurables within a reasonable period of time.

AIE will provide all the necessary assistance and resources to resolve all supplier related issues. However, repeated failure to comply with AIE requirements will inevitably result in the development of a resourcing plan for all products/services provided to AIE by the delinquent supplier.

37. Forms / Documents

Examples of referenced forms are available on request.

- Title
- Supplier Development Manual
- Terms and Conditions
- Non-Disclosure Agreement
- FAIR documents
- Supplier Quality Purchasing System Survey
- Product Safety Awareness guidance
- Goods Inwards Inspection (GII)

38. Record Retention (8.4.3 k)

Supplier will retain and preserve all records and materials, including invoice records, pertaining to this Contract for a period of 10 years after the final delivery, expiration or termination of this Contract unless longer period is required by Purchase Order flow-down requirements (Supplemental Purchase Order Conditions), or for the period prescribed by applicable law, whichever period is longer. Supplier will require each of its sub-tier suppliers to do likewise with respect to their records and materials.

AIE (UK) Ltd

Unit 2, Ringway Industrial Estate
Eastern Avenue, Lichfield,
Staffordshire, WS137SF

T: 01543 420700
W: www.aieuk.com
E: mail@aieuk.com

Company Number: 8058103
VAT Number: 134306837

39. Revision History

Detail	Issue Level	Date
First Release	1	25/05/2019
<ul style="list-style-type: none"> • Wording clarifications all along the document • Added Chapter: <ul style="list-style-type: none"> • Foreign Object Debris (FOD) • Prevention of Counterfeit Parts • First Article Inspection Report (F.A.I.R) • Supplier Management System • Record Retention • Supplier Acknowledgement • Obsolescence 	2	31/03/2020
<ul style="list-style-type: none"> • Updated Section 6. Applicability to include Sub-Tier Control 	3	08/07/2020
<ul style="list-style-type: none"> • Quality Manager Name change 	4	10/09/2020

AIE (UK) Ltd

Unit 2, Ringway Industrial Estate
 Eastern Avenue, Lichfield,
 Staffordshire, WS137SF

T: 01543 420700
W: www.aieuk.com
E: mail@aieuk.com

Company Number: 8058103
 VAT Number: 134306837

Supplier Development Manual

40. Supplier Acknowledgement

To be returned by Supplier via email to: **abdulm@aeuk.com**

CONFIRMATION:

With the signature below, the supplier recognises the entire contents of this requirements specification / system specification and is obliged to assure that it is adhered to and accounted for in the quotation submission or performance of the order.

Should the supplier desire changes to any individual points, they must be named in detail, specifying the corresponding point in the requirement specification / system specification in written form when submitting the quotation, and to be agreed upon with the client before commencement of the contract.

Every official change that influences the contract must be made in written form and be approved by the supplier.

We hereby confirm that we have received and we understand the AIE Supplier Development Manual.

We agree to strive to meet these customer requirements, in all our facilities working with AIE products.

Supplier Name	
Supplier Address	
Function	
Telephone number	
Email address	
Signature	
Date	

AIE (UK) Ltd

Unit 2, Ringway Industrial Estate
 Eastern Avenue, Lichfield,
 Staffordshire, WS137SF

T: 01543 420700
W: www.aieuk.com
E: mail@aeuk.com

Company Number: 8058103
 VAT Number: 134306837