

APPENDIX 5. STRUCTURE AND CONTENTS OF THE EQUIPMENT REQUIREMENT SPECIFICATION

Structure and contents of the equipment requirement specification

1 Introduction

The introduction briefly explains the purpose of the equipment requirement specification in question and also describes in brief to the supplier the manner in which the other submitted documentation and appendices to the equipment requirement specification are related to the delivery in question, and how they are used:

- data sheet; its use and completion with the manufacturer's design values
- general inspection plan and reports on the inspections carried out
- material requirement specifications and inspection plan for the materials, certificates and documentation related to the other material requirements.

2 Scope of application

This section describes the scope of application of the equipment requirement specification in question, explaining applications where the procedure in question may be applied and applications where the equipment requirement specification in question is applied with restrictions.

For example: *This equipment requirement specification applies to the design and manufacture of serially-manufactured metallic control valves for small-diameter piping (DN50 and smaller) of nuclear facilities in safety classes SC2, SC3 and Class EYT. This equipment requirement specification does not apply to size categories > DN50, nor is this equipment requirement specification applied to plastic piping or any equipment subject to fatigue loads.*

Intended for the manufacturer, this procedure does not, therefore, specify the requirements set for the phases related to installation, operation, monitoring, maintenance or decommissioning; instead, requirements pertaining to the related equipment manufacture are included directly as requirements in the equipment design.

3 Design bases

This section describes the paragraph or another document related to the delivery and containing the requirements set by the technical properties of the equipment, operating environment and external conditions.

Of the design bases, the safety class, mechanical design loads including forces exerted by piping, minimum design values (pressure, temperature, capacity, pressure test data), forces exerted by an actuator and forces required from an actuator under normal operational conditions and operational occurrences, ambient conditions under normal operational conditions and operational occurrences (temperature, moisture, radiation), properties of the medium (viscosity, specific weight, water, steam or some other), required service life, basic requirements set for integrity, leak tightness and operability, as well as dynamic loading capacities and operability requirements under exceptional circumstances (accidents, pipe breaks, external events), are presented in the pre-completed data sheet (appendix to the equipment requirement specification) submitted in connection with the order.

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Design bases of equipment subject to dynamic (fatigue) loading and requirements thereof shall be observed and presented, when required.

Equipment-specific quality control requirements are specified in the general inspection plan that is a part of the equipment requirement specification or an appendix to it.

Requirements for integrity, leak tightness and operability according to the intended purpose of use, requirements set on the inspectability of equipment and the possibility to decontaminate are factors heavily related to the plant unit and installation location, and these are described either in plant unit-specific requirement specification or installation specifications.

Likewise, the process and instrumentation diagrams or the operation and connection to the system of the equipment shall not be described in the equipment requirement specifications; instead, the licence holder will describe and assess the suitability of the equipment in its summary of justifications to the regulatory body in conjunction with the submittal of the installation construction plan at the latest.

The equipment requirement specification shall describe the manner in which the equipment can be divided into various parts for which different kinds of requirements may be imposed in line with the requirements laid down for part groups in YVL Guides E.3, E.8 and E.9 (Appendix B).

The data sheet is an appendix to the equipment requirement specification. The general inspection plan is either a part of the equipment requirement specification or an appendix to it.

4 Manufacturer

Requirements set for the manufacturer in the equipment requirement specifications:

- Requirement for the certification of a quality system and notification stating that the licence holder shall be provided with an opportunity to audit the manufacturer.
- Requirements for the inspection and testing organisations.
- Requirements set for the special processes are presented in the equipment requirement specifications; as a rule, standards are used. If the manufacturer does not have a standard-compliant certificate, it must be demonstrated that the manufacturing is in compliance with the standard.

5 Materials

Describes the requirement to list the parts of the equipment (e.g. assembly drawing and parts list complete with material and certificate information) to allow for the licence holder and regulatory body to assess whether the requirement specifications for the materials have been used correctly by part groups.

This section presents, for example, the following requirements:

- The pressure-retaining parts (PG1) and parts essential for operation (PG2) shall be of standardised materials, which have been proven suitable in practice for the application.

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- Austenitic cast steel shall not be used as the structural material in the bodies of equipment subject to in-service inspections unless their inspectability can be reliably demonstrated.
- Structural materials containing elements that could become activated shall be avoided in surfaces, from which material could peel off, of equipment that is in contact with primary circuit water and come into contact with the medium; this shall be ensured by specifying an additional requirement on the data sheet.

The maximum amount of elements that could become activated is presented in the plant unit-specific specification.

6 Design requirements

This section presents the equipment requirement specification-specifically allowed/pre-approved design standards that the manufacturer may directly apply. This is also where the procedures for the adoption of alternative standard series into use are presented. Requirements related to the PED are presented here.

In this section, the requirements for a type test conducted in advance, or on an order, are specified.

Operating experience requirements, requirements for commercial-grade products, requirements set for inspectability during operation, requirements for sustained operability (thermal expansion, etc.), leak monitoring, double seal requirements, disconnections and interlockings shall be described here.

7 Technical specifications (incl. documentation requirements)

This section describes the documentation that shall be made available and submitted from the various phases:

- design documentation, including type test documentation and other procedure qualification documentation as well as delivery references and operating experience data
- documentation related to the manufacturer's organisation, including (where applicable) the required manufacture, testing and inspection as well as manufacturing personnel certificates
- manufacturing procedures and inspection procedures (where applicable)
- certificates related to the materials used
- inspection certificates from the time of manufacture (where applicable)
- certificates related to the manufacturer's final inspection (test run report, pressure test report, certificate of conformity)
- equipment assembly drawings and parts lists, fully completed data sheet or design data submitted by other means
- installation, operating and maintenance instructions as well as spare parts list.

8 Control of manufacturing

This section describes control of manufacturing and the related requirements.

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The manufacturer controls, inspects and reports the manufacture and its phases according to the applicable standard, certificates and type test with consideration to the design bases, in accordance with the quality system and its scope and under the supervision of an appropriate third party. The licence holder may control the manufacture and the related inspections and tests in the extent it deems necessary.

The manufacturer compiles into manufacture result documentation the testing, inspection, and supervision protocols that have been prepared during manufacturing. The reception certificates of the materials and welding consumables, the qualification certificates of the personnel, the non-conformity reports processed, and other records created during manufacturing, the supervision of manufacturing, and testing shall be included in the result documentation.

9 Construction inspection (incl. review of the result documentation)

This section describes the construction inspection performed in stages, including the review of the result documentation:

- The manufacture and the approved third party selected by the manufacturer conduct the inspection of the delivery according to a certified quality system and this requirement specification and the related appendices in the scope specified therein before delivering the product to the client.
- The manufacturing result documentation compiled during the design, manufacture and control thereof shall be provided to the client together with the equipment.
- The third party submits a certificate of conformity for inclusion in the result documentation.
- The licence holder provides for the opportunity to conduct the construction inspection at the manufacturer's facility before the delivery or, at its discretion, it may decide to have its own construction inspection conducted at the reception storage waiting area.
- The licence holder shall review the reception of the delivery and delivery documentation no later than before the equipment can be released for stock storage or installation.
- The manufacturer shall provide the licence holder with installation, operating and maintenance instructions before the equipment is released for stock storage or installation.

Appendices:

1. General inspection plan

The general inspection requirements and inspection reporting requirements during equipment manufacture are presented in the general inspection plan.

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2. Data sheet

The general or location-specific design bases and required (minimum) design values during different operating states are presented in a data sheet.