General description of services for certification of materials and components
FOREWORD

DNV GL class programmes contain procedural and technical requirements including acceptance criteria for obtaining and retaining certificates for objects and organisations related to classification.

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This is a new document.
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SECTION 1 GENERAL

1 Introduction
The classification concept consists of the development and application of rules with regard to design, construction and survey of vessels.
The scope of classification requires that specified materials, components and systems intended for the vessel are certified according to the rules. The objective of certification is to ensure that materials, components and systems used in vessels to be classed by the Society comply with the rule requirements. This part of the classification scope is defined as the CMC (certification of materials and components) services.
The CMC services follow the classification concept as described in the rules.

2 Objective of this publication
The objective of this publication is to give a description of the CMC services within classification and some of the principles behind these services.

3 Definitions

3.1 Definition of certification
Certification is defined as a service that comprises assessment of compliance with applicable requirements and issuance of a certificate if compliance is confirmed, see RU SHIP Pt.1 Ch.1 [1.2] Table 2.
For certification related to classification, the third party is the Society, the specified requirements are the rules, and the written statement that the rules are fulfilled will be a certificate.

3.2 Definition of manufacturer
A manufacturer is defined as an organization that manufactures the material or product, or carries out part production that determines the quality of a material or product, or does the final assembly of a product, see RU SHIP Pt.1 Ch.1 [1.2] Table 2.
A manufacturer must take and acknowledge the responsibility for the delivered material/product.

3.3 Definition of intermediary
An intermediary is defined as a company which is supplied with products by the manufacturers and which then in turn supplies the products to a buyer without further processing or after processing without changing the properties specified in the purchase order and referenced product specification.

4 Abbreviations
\[ \begin{array}{ll}
AoM & = \text{Approval of Manufacturer} \\
CMC & = \text{Certification of Materials and Components} \\
EU & = \text{European Union} \\
GCA & = \text{General Certification Agreement} \\
MED & = \text{Marine Equipment Directive} \\
MR & = \text{Mutual Recognition} \\
MPQA & = \text{Manufacturer Product Quality Assessment} \\
MSA & = \text{Manufacturing Survey Arrangement}
\end{array} \]
$PQA = \text{Production Quality Assurance}$

$RO = \text{Recognized Organisation}$

$TA = \text{Type Approval}$

$TE = \text{Type Examination}$
SECTION 2 CERTIFICATION SERVICES

1 General

1.1 Objective and value of CMC
The objective of the CMC services is to ensure that materials used, and components and systems installed on vessels classed by the Society comply with the rule requirements. The value of the CMC services for the Society’s customers is that compliance with the requirements is verified and documented, and that this is done in an efficient and cost-effective way by competent personnel. Further, some of the services may also give an efficient marketing effect of companies and products.

1.2 Certification at a manufacturer
In general, certification of materials, components and systems will be carried out at the manufacturer, i.e. where materials, components and systems are being manufactured. A certificate confirming compliance with the requirements will be issued to the manufacturer when compliance has been confirmed, see [3.4] and [4.4.3]. Only new and unused materials, components and systems can be certified. Second hand (i.e. used) equipment will not be certified. The Society’s involvement in second hand equipment will be documented by survey reports.

1.3 Certification at an intermediary
Occasional certification at an intermediary may be performed when all possibilities for a normal certification procedure at the manufacturer are excluded due to:
— short delivery times, e.g. delivery to repair of ships in operation
— intended use and or installation is not known at time of production.
Accordingly, new materials and components that have been certified by another classification society, may under certain conditions be re-certified by the Society at an intermediary for compliance with DNV GL rules.

2 General certification agreement

2.1 Background
Manufacturers are continuously aiming at reduced delivery times of their products. At the same time they are trying to avoid delays that may be costly and result in lost opportunities. Therefore, it is essential for manufacturers to have efficient and streamlined production lines and quality control of their products. The Society will support the manufacturers in their efforts on reduced delivery times and avoid delays.

2.2 Agreement
In order to support efforts on reduced delivery time and to ensure efficient and correct certification processes, the Society considers it beneficial to establish general certification agreement (GCA) between manufacturer and the Society. In such agreement the daily procedures for efficient processes for design approval and surveys will be laid down.
Information and documentation required may also be part of such an agreement. Further, the agreement will also normally include commitments on transfer and sharing of information and experiences that are considered beneficial for the manufacturer and the Society. Contact your nearest DNV GL office for more information: https://www.dnvgl.com/contact/find-our-offices.html

### 3 Material certification

#### 3.1 General

Material certification based on the rules, will in most cases include the following two main elements:
- approval of the manufacturer, see [6]
- testing and inspection of the individual materials, see [3.3].

Applicable chapters of the Society’s rules define the extent and requirements to material testing.

#### 3.2 Objective and basis for testing and inspection

The objective of the testing and inspection is to verify and document that the materials are in compliance with the specified rule requirements, the material standard and the purchase order when applicable. It is important that prior to the testing and inspection, the manufacturer provides the surveyor with the technical specifications of the order and the intended use of the material.

#### 3.3 Scope and process

The surveyor shall carry out the inspections and witness the testing as required by the rules and approved specifications. In order to do so, the surveyor must at any time be given access to all areas and facilities for production and quality control at the manufacturer. The testing of the materials shall be carried out on representative test pieces from sample products to the extent described in the rules. When found acceptable, a manufacturing survey arrangement (MSA) can be agreed between the local DNV GL office and the manufacturer, see [7].

The certification of the materials will in such cases be carried out as agreed in the MSA.

#### 3.4 Material certificate

When compliance with the requirements is confirmed, a material certificate will be validated by the Society. The material being certified will be marked for traceability to the certificate in accordance with the rules, see [10].

### 4 Product certification

#### 4.1 General

The applicable chapters of the Society's rules define the extent of the certification that is required. Product certification includes normally:
- approval of the product design, and
- survey during the production and / or of the final product.
The survey will be carried out at the manufacturer’s premises. The design approval will either be on a “case by case” basis, see [4.2], or follow the procedure for type approval, see [5]. When found acceptable, a manufacturing survey arrangement (MSA) can be agreed between the local DNV GL office and the manufacturer, see [7]. The product certification will in such cases be carried out as agreed in the MSA.

4.2 Design approval “case by case”

4.2.1 Documentation requirements
When the design approval is performed on a “case by case” basis, documentation of the design shall be submitted for approval for each application / project.

The documentation requirements are described in the various chapters in the rules. If there are any doubts about which documentation to be submitted, the local DNV GL office will assist in identifying correct documentation.
If the product design needs to be revised, new updated drawings shall be submitted for approval.

4.2.2 Scope and process
In order to achieve an efficient design approval process, it is a prerequisite that correct and complete documentation is submitted to the local DNV GL office as soon as available for the relevant application / project.

This is important in order to be able to finish the approval before starting the survey phase. Otherwise, delays in the production may be the consequence.

All relevant information for the actual application shall be included, such as vessel name, newbuilding number, yard, purpose/function of equipment, etc. Information about previous approvals of same type of product is also relevant.

The Society has established a service for digital handling of drawing approval. For further information, see [4.3].

If submitted on paper, 2 sets of the required drawings/documentation shall be submitted. However, more copies of the drawings may be required in each separate case. This is to be agreed with the local DNV GL office.

4.2.3 Approval letter
A design approval letter or design verification report will be issued and sent to the manufacturer by the Society when compliance with the requirements for the design has been confirmed.

4.3 Digital design approval
Manufacturers are offered secure service for submitting and receiving documentation digitally. Documentation and accompanying letters shall then be uploaded to a secure server. From there the Society will start the process of approving the documentation electronically, including comments and stamping the drawings.

When approval has been completed the approved documentation will be made available to the manufacturer on the secure server together with the approval letter.

Further information about the digital document handling through a secure server; please contact the local DNV GL office.
4.4 Survey during production, “case by case”

4.4.1 Objective
The objective of the surveys carried out by the Society’s surveyor during the production and testing of the final product, is to verify and document that the final product is in compliance with the specified rule requirements and the approved design documentation. Accordingly, the surveyor must be given access to all areas and facilities for production and quality control.

4.4.2 Scope and process
In order to get an efficient process and to avoid delays, it is important that the Society’s involvement in connection with the surveys and testing is harmonised with the ongoing production process and the manufacturer’s own quality controls.

The manufacturer’s request for survey should be submitted to the Society well in advance of the survey date. Further, it is important that the necessary survey “hold points” are identified in the manufacturer’s production and quality plans. The local DNV GL office will assist in identifying these “hold points”.

It would be beneficial for the manufacturer and the Society that such issues are laid down in a general certification agreement, see [2].

The manufacturer’s own quality control of the product shall be traceable and documented to the extent given in the applicable chapters of the rules. Further, the quality control shall be carried out by qualified personnel at facilities and with equipment suitable for the control.

During the survey it will be verified that the product fulfils all applicable rule requirements and that the product has been manufactured in accordance with the approved design.

If the product for any reason has not been manufactured in accordance with the approved design or if any repairs need to be done, the Society shall be notified and further actions shall be agreed upon.

4.4.3 Product certificate
When compliance with the requirements and the approved design is confirmed, a product certificate will be issued by the Society to the manufacturer for documentation of compliance with the requirements.

The product certificate may alternatively be issued to a company placing a product on the market under the company’s name and thus presenting the company as the manufacturer of the product even if the designing and/or manufacturing and/or assembly are partly or fully subcontracted or licenced to other companies, provided:

— the company is the owner of the design, or have a written acceptance from the owner of the design that the product certificate can be issued in the name of the company
— the company takes full responsibility for the conformity of the product to the applicable requirements
— the Society is given relevant access premises of and full cooperation by other companies that are allowed to / given responsibility for designing, manufacturing or assembling the product.

The product shall be marked for traceability to the certificate as advised by the Society, see [10].

4.5 Survey during production on the basis of a manufacturing survey arrangement
A manufacturing survey arrangement (MSA) represents an alternative certification process. See [7] for details.
5 Type approval

5.1 General
The DNV GL type approval (TA) scheme is a procedure by which the Society confirms compliance with rules for standard designs and/or routinely manufactured, identical components.

TA may be used as an alternative to a case by case design approval when the material, product or system are intended for Society classed vessels. For certain products, as defined in the applicable chapters of the rules, TA is a mandatory procedure for confirming compliance with the rules.

For further details of the type approval service from the Society, see class programme CP 0338 DNVGL Type approval scheme.

6 Approval of manufacturer

6.1 General
In this document, the term “approval of manufacturer” is covering approval of material/product manufacturers (AoM), heat treatment workshops approval (HWA) and welding workshops approval (WWA).

Approved manufacturers are published on http://www.dnvgl.com.

For further details regarding when “approval of manufacturer” is required and for details about the approval process, please see rules RU SHIP Pt.2 Ch.1 Sec.2 and relevant class programs.

7 Manufacturing survey arrangement

7.1 Definition
A manufacturing survey agreement (MSA) is a formal written agreement between the manufacturer and the Society regarding application of an alternative product certification scheme.

A Society recognition of the manufacturer’s product quality assurance system is a prerequisite for establishment of MSA, see [8].

7.2 Objective
The objective of establishing an MSA is to achieve a reliable, efficient and cost effective CMC service by utilising the manufacturer’s product quality assurance system as part of the survey and certification process when found effective to attain the quality, safety and environmental standard of the rules.

7.3 Conditions
Establishment of an MSA is conditional upon that:

— The Society recognizes the manufacturer’s product quality assurance system and its application for the manufacturing of specified products. This shall be documented in a recognition certificate, see [8].
— The product certification is based on rules by the Society.
— Certification is done on regular basis.
— The damage rate is acceptable low.
7.4 Scope and process
When establishing an MSA, the manufacturer and the Society shall agree on the scope of work that shall be covered by the MSA.
The MSA can only cover products that are already covered by a recognition certificate. The MSA will refer to the applicable recognition certificate(s).

7.5 Validity of manufacturing survey arrangement
An MSA is normally given a validity of 4 years.
In order to retain the validity of the MSA, the applicable recognition certificate(s) must be maintained, including successful periodic assessments of the manufacturer.
When the MSA is applied to products where approval of manufacturer (see [6]) is required the MSA automatically becomes invalid if the conditions for the approval of manufacturer are no longer fulfilled or if the approval is suspended/withdrawn.

7.6 Suspension of manufacturing survey arrangement
If the Society as a result of survey or by other means does not have sufficient confidence in the manufacturer’s procedures and processes for production and quality control, the Society may at any time suspend the MSA.
If an MSA is suspended or withdrawn, this will have no retroactive influence on the fee initially charged for the MSA.

8 Recognition of manufacturer

8.1 Definition
The DNV GL recognition of manufacturer covers product quality assurance system as applied for the manufacturing of a specific list of products.

8.2 Objective
The objective of recognition of manufacturers is to document that the manufacturers’ product quality assurance may form the basis for agreeing on an alternative product certification scheme where the Society regularly follow up the implementation of the product quality assurance system as an integral part of verifying a products compliance with the rules.

8.3 Conditions
Recognition of a manufacturer is conditional upon that:
The manufacturer has a documented product quality assurance system that meet the quality, safety and environmental level of the rules.
Regular survey by the Society shows that the product quality assurance system is implemented in daily production.
The manufacturer has in operation a quality system certified by an accredited body to ISO 9001, or equivalent.
8.4 Scope and process
The manufacturer and the Society shall agree on the products that shall be covered by the recognition certificate.
The process include review of documented procedures and processes, survey of the manufacturing process and facilities and initial and periodical survey checking the implementation of the product quality assurance system.
The recognition of a manufacturer will be documented in a recognition certificate. List of recognised manufacturers will be available to the public on www.dnvgl.com.

8.5 Validity of recognition of manufacturer
A recognition of manufacturer is normally given a validity of 4 years.
Successful periodic assessment of the manufacturer is required in order to retain the validity of the recognition.
The Society may at any time select to perform unscheduled survey of the manufacturing process, the documentation of the product quality assurance system and the implementation thereof.

8.6 Suspension of recognition of manufacturer
The holder of a recognition certificate is obliged to inform the Society of any changes to procedures and processes that may influence the quality of products listed in the recognition certificate. A breach of this obligation may result in suspension or withdrawal of the recognition.
If the Society as a result of survey or by other means does not have sufficient confidence in the manufacturer's documentation and implementation of a product quality assurance system that meet the quality, safety and environmental level of the rules, the Society may at any time suspend or withdraw the recognition.

9 Definition of DNV GL certificates

9.1 General
See rules RU SHIP Pt.1 for definition of DNV GL certificates.

10 Marking of products
In order to ensure traceability between the material/product certified by the Society and the certificate issued for the material/product, all materials/products shall be clearly marked for traceability to the certificate. This marking shall normally be done by hardstamping.
The marking shall as a minimum include the DNV GL mark (VL) and the certificate number.
A typical example of marking may then be: VL N14A123456.
The marking shall be affixed to the product or to its data plate so as to be visible, legible and indelible throughout the anticipated useful life of the product. However, where that is not possible or not warrantable on account of the nature of the product, it shall be affixed to the packaging of the product, to a label or to a leaflet.
SECTION 3 DNV GL SCHEME VERSUS OTHER SCHEMES

1 DNV GL type examination

1.1 Basic principles

The general definition used for type approval, see Sec.2 [5.1], applies for type examination as well. However, the difference between type approval and type examination is the requirements forming the basis for the examination.

A DNV GL TA certificate is issued on the basis of compliance with requirements in DNV GL rules, DNV GL offshore standards or DNV GL type approval programmes.

The basis for a DNV GL type examinations is any other standard than the rules, DNV GL offshore standards and DNV GL type approval programmes. The standards used can be national or international standards as long as they include specific requirements to the design of the product.

When a product has got a DNV GL TA, the product design is found acceptable for DNV GL classed vessels within the stated limitations. This is, however, not necessarily the case for products covered by a DNV GL type examination certificate. The reason is that the standard used as basis for the type examination, has not been evaluated for application on DNV GL classed vessels.

For further details of the type approval and type examination services from the Society, see DNVGL-CP-0338 - "DNV GL type approval scheme".

2 EC type-examination

2.1 Basic principles

When an EC type-examination is carried out for the design of a product type, this is done on the basis of an EU Directive and the associated international standards. Compliance with the directive (according to module B) and standards is documented by issuance of an EC type-examination certificate.

The examination of the design and the issuance of the certificate can only be done by notified bodies.

The Society is a notified body and can therefore issue EC type-examination certificates with basis in several different EU directives.

The directives and standards used have in general not been evaluated with regard to application of the product type on DNV GL classed vessels. EC type-examination certificates may for that reason not generally be accepted as basis for certification of product intended for DNV GL classed vessels.

An exception is when acceptance is prescribed in the Rules.

For certification according to MED, other certificates related to the product fabrication are required in addition to the EC type-examination certificate.

2.2 Procedure

The procedure used for examination and issuance of the EC type-examination certificate, is the same as used for DNV GL type approval, see Sec.2 [5].

2.3 EC type-examination certificate

An EC type-examination certificate is issued to the manufacturer of the product or his authorised representative.

The EC type-examination certificate may be given a validity for a limited period of time. There are, however, no specific requirements for retention of the certificate during the period of validity.
3 Type approval

3.1 General
The Society is operating the following two type approval schemes:
— DNV GL type approval
— EU RO mutual recognition (MR) type approval.
For further details of the type approval schemes from the Society, see DNVGL-CP-0338 - "DNV GL type approval scheme".

4 Class certification versus non-class certification

4.1 Non-class certification
The class-related certification of materials and components (CMC) are described in Sec.2 [3] and Sec.2 [4].
The Society is also doing third party certification (non-class certification) to other standards than the DNV GL rules.
In this case the Society is acting as an independent certification body. Basis for the certification is national and international standards and order specifications.
When compliance with the specification and/or standard has been confirmed, the Society may as agreed in the scope of the order issue a product certificate or other relevant documents or validate documents issued by the manufacturer.
CHANGES – HISTORIC
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