

NORSOK STANDARD

MECHANICAL EQUIPMENT SELECTION

R-100
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FOREWORD

NORSOK (The competitive standing of the Norwegian offshore sector) is the industry initiative to add value, reduce cost and lead time and remove unnecessary activities in offshore field developments and operations.

The NORSOK standards are developed by the Norwegian petroleum industry as a part of the NORSOK initiative and are jointly issued by OLF (The Norwegian Oil Industry Association) and TBL (Federation of Norwegian Engineering Industries). NORSOK standards are administered by NTS (Norwegian Technology Standards Institution).

The purpose of this industry standard is to replace the individual oil company specifications for use in existing and future petroleum industry developments, subject to the individual company's review and application.

The NORSOK standards make extensive references to international standards. Where relevant, the contents of this standard will be used to provide input to the international standardisation process. Subject to implementation into international standards, this NORSOK standard will be withdrawn.

INTRODUCTION

This standard replaces R-DP-001, rev. 1, April 1996 and includes some revisions marked with a vertical line in the margin.

1 SCOPE

This standard defines selection criteria and -guidelines for mechanical equipment. The standard shall be used for optimised conceptual work, preliminary and detail design phase for oil production facilities, but is also for verification of selection and sizing of equipment before placement of orders. This standard shall not be used for purchasing of equipment.

The standard covers guidelines for the selection and sizing of rotating machinery and other mechanical equipment in critical service in oil installations, such as:

- Gas or oil processing.
- Power generation.
- Gas or oil export.

2 NORMATIVE REFERENCES

The following standards include provisions which, through reference in this text, constitute provisions of this NORSOK standard. Latest issue of the references shall be used unless otherwise agreed. Other recognized standards may be used provided it can be shown that they meet or exceed the requirements of the standards referenced below.

2.1 Gas turbine

API 616 Type H Industrial Combustion Gas Turbines for Refinery Services. (Replace with ISO 3977 when issued)

2.2 Compressors

API 617 Centrifugal Compressors for General Refinery Services (Replace with ISO 13711 when issued)

API 11P Specification for Packaged Reciprocating Compressors for Oil and Gas Production Services.

API 619 Rotary - type Positive Displacement Compressors for General Refinery Service. (Replace with ISO 10440 when issued).

2.3 Centrifugal pumps

API 610 Centrifugal Pumps for General Refinery Services. (Replace with ISO 13709 when issued)

NFPA 20 Firewater Pumps.

Hydraulic Institute Standards for centrifugal, rotary & reciprocating pumps.

2.4 Heat exchangers

TEMA Class R Tubular Exchanger Manufacturing Association.

Pressure retaining equipment shall be designed in accordance with one of the following codes:

BS 5500	Unfired Fusion Welded Pressure Vessels.
ASME	Boiler and Pressure Vessel Code, section VIII division 1 & 2.
TBK 1 & 2	General Rules For Pressure Vessels.

3 DEFINITIONS AND ABBREVIATIONS

3.1 Definitions

Can	Can-requirements are conditional and indicates a possibility open to the user of the standard.
Critical service	Critical service is defined as a service where failure of the machine to operate correctly results in an unsafe condition which puts the lives of personnel at risk or jeopardises equipment. Further, it is a service where failure of the machine to operate correctly makes a plant or process unacceptable as a production unit. High criticality requires equipment with high quality, high reliability, stringent testing and eventually redundancy. Alternatively, three half-capacity machines shall be specified, two running in parallel with the third unit as a spare.
May	May indicates a course of action that is permissible within the limits of the standard (a permission).
Shall	Shall is an absolute requirement which shall be followed strictly in order to conform with the standard.
Should	Should is a recommendation. Alternative solutions having the same functionality and quality are acceptable.

3.2 Abbreviations

NFPA	National Fire Protection Association
TBK	Norwegian Pressure Vessel Committee
TEMA	Tabular Exchangers Manufacturers Association
WHRU	Waste Heat Recovery Unit

4 GENERAL REQUIREMENTS

4.1 Reparability and maintainability

The design of mechanical equipment shall prepare for optimum operation and maintainability. Effort shall be made, to standardise the spares stocking by minimising the variety of makes and types of driven equipment, drivers and auxiliary equipment selected for any particular project. This standardisation shall be applied so far as it does not interfere with the selection of an optimal solution for the specified operating conditions.

Equipment should be accessible to obtain and maintain. Equipment should be capable of being removed for maintenance. Equipment should be prepared for condition monitoring. Equipment should be capable of being isolated from pressure for maintenance and any gas/liquid inside the isolation be capable of being bled off and flushed out.