TECHNICAL REPORT

RAPPORT TECHNIQUE

TECHNISCHER BERICHT

CEN/TR 14585-3

October 2017

ICS 23.040.70

English Version

Corrugated metal hose assemblies for pressure applications - Part 3: Design method

Tuyauteries métalliques flexibles onduleuses pour applications sous pression - Partie 3: Méthode de conception

Gewellte Metallschlauchleitungen für Druckanwendungen - Teil 3: Auslegungsverfahren

This Technical Report was approved by CEN on 25 September 2017. It has been drawn up by the Technical Committee CEN/TC 342.

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European foreword

This document (CEN/TR 14585-3:2017) has been prepared by Technical Committee CEN/TC 342 "Metal hose, hose assemblies, bellows and expansion joints", the secretariat of which is held by SNV.

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Introduction

Technical Committee CEN/TC 342 “Metal hose, hose assemblies, bellows and expansion joints” is carrying out a revision of EN 14585-1:2006 and CEN/TR 14585-2:2006 to include calculation methods for the combined structure of hose and braid for:

— pressure resistance;

— fatigue life;

— allowable displacements.

The selection of materials for corrosive environments and the calculation of fluid pressure drops are also being included.

It is appreciated that these studies are ambitious and will involve much new analyses so that this revision will take some time.

Whilst continuing to work on this revision, CEN/TC 342 decided that the key aspects of the calculation method should be circulated as an informative Technical Report CEN/TR 14585-3, which is limited to the pressure resistance of the combined structure of hose and braid. This approach will enable manufacturers and Notified Bodies to use and gain experience of the calculation method and any feedback can be taken into account in the revision of EN 14585, harmonized to the Pressure Equipment Directive 2014/68/EU.

1 Scope

This Technical Report provides guidance on the design of corrugated metal hose assemblies for pressure applications, i.e. maximum allowable pressure PS greater than 0,5 bar. Allowable stresses are consistent with the requirements of the Pressure Equipment Directive 2014/68/EU.

2 Normative references

Not applicable.

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN ISO 7369 and the following apply.

3.1
metal hose assembly
assembly of a corrugated metal hose with its end fittings

Note 1 to entry: In the context of Pressure Equipment Directive [1], a metal hose assembly is a component of piping and not a PED assembly.

3.2
maximum allowable pressure PS
maximum pressure for which the metal hose assembly is designed

3.3
maximum/minimum allowable temperature TS
maximum and minimum temperature for which the metal hose assembly is designed

3.4
nominal pressure PN
dimensionless alphanumerical designation which is a convenient rounded number commonly used for reference purposes of piping components and stock parts; for this Technical Report PN represents the maximum allowable pressure at 20 °C as specified by the metal hose assembly manufacturer

3.5
test pressure PT
pressure at which the pressure metal hose assembly is pressure tested (normally at ambient temperature)

3.6
main pressure bearing parts
parts, such as corrugated metal hose, braid, pipe ends, the failure of which may result in a sudden discharge of pressure energy

3.7
pressure bearing parts
parts, such as swivel nuts, flanges, threaded fittings, that are not main pressure bearing parts defined in 3.6 and the failure of which may not lead to a sudden discharge of pressure energy

3.8
attachments to pressure parts
parts, such as ferrules, that are directly welded to parts defined in 3.6 or 3.7