New Version 9.8

Author: <>

EN1591, EN13445 Annex G, ASME VIII Amendment 06, PD5500:2006 Amendment 1, ...

VVD - Visual Vessel Design

Version 9.8 - General

Version 9.8 includes a number of improvements and additions. This version is also in compliance with:

- ASME VIII Amendment 06

- EN13445 up to and including Issue 23

- PD5500:2006 Amendment 1

Some general enhancements of the new version includes:

- Added the Alternative Method for Flange Design according to EN1591 and EN13445 Appendix G.

- Added a new material library for construction materials to EN10025 part 2.

- Added table for standard shackles to EN13889 for use in design of lifting lugs.

- Lifting lug calculations updated to latest version of DNV standard 2.7-1 April 2006.

Version 9.7 included calculation of maximum test pressure for each components. To enable the calculation of maximum test pressure, modifications to all primary modules was required, this was a comprehensive work and even though a detailed testing was performed still some functionality problems remained when version 9.7 was released (especially for the ASME VIII module). These problems have now been solved.

Version 9.8 - EN13445

Version 9.8 is in compliance with EN13445 up to and including Issue 23.

Added Annex G, Alternative Method for Flange Design

The Alternative Method has the following advantages:

- Gives in many cases a more economical solution (envelope project showed that 9 of 10 flanges analysed gave a more economical solution).

- Ensures a leak free joint/leak tightness

- Allows the designer to analyse existing flanges to determine cause of un-tightness

- Includes effect of thermal expansion effects due to differences in bolt temperature and/or materials

- Determines the rotation/deformation of joint in all conditions

- Includes effect of external loading

- Determines minimum required bolt torque based selected bolting up method

- The flange can be attached to a conical shell or a domed end

Added Part 3: Design - Alternative Route

6.3 Alternative route for steels (except castings) other than austenitic steels

The alternative route allows the use of higher nominal design stress (an increase of up to 28% in extreme cases) by reducing the safety factor on tensile strength from 2.4 to 1.875 if all of the following conditions are met:

a) Material requirements as specified in EN 13445-2:2002 for Design by Analysis – Direct Route.

b) Restriction in construction and welded joints as specified in Clause 5 and in Annex A of EN 13445-3:2002 for Design by Analysis – Direct Route.

c) All welds which must be tested by non-destructive testing (NDT) according to the requirements of EN

13445-5:2002 shall be accessible to NDT during manufacture and also for in-service inspection.

d) Fatigue analysis according to Clause 17 or 18 in all cases.

e) Fabrication requirements as specified in EN 13445-4:2002 for Design by Analysis – Direct Route.

f) NDT as specified in EN 13445-5:2002 for Design by Analysis – Direct Route.

g) Appropriate detailed instructions for in-service inspections are provided in the operating instructions of the manufacturer..

NOTE Until sufficient in-house experience can be demonstrated, the involvement of an independent body,

appropriately qualified, is recommended for the assessment of the design (calculations) and for assurance that all

requirements are met in materials, fabrication and NDT.

Version 9.8 – ASME VIII Div.1

Version 9.8 is in compliance with ASME VIII Amendment 06.

- Added option for pneumatic test pressure to UG-100.

Version 9.8 – PD5500

Version 9.8 is in compliance with PD5500:2006 Amendment 1.