

Dedication

If I Can Give You Anything I Will Give You The World. But All I've Is My Love
And Respect.

To The One Who Worked Hard, To Push Me Forward. Who Mixed His Sweat With
Tears And Blood To Give Me The Opportunity To Become The Man I Am Today.
My Father.

To The Smile That Lighten The World, To The Sea Of Love, Forgiveness And
Compassion.
My Mother.

To The Inspiration, Love Of My Life And The One I Choose To Accompany Me In
My Life Journey.
My Love.

To Those Who Taught Us That We Can Do Whatever We Want, That There's No
Life without Hope and That the World Is Ours If We Wants To.
My Teachers.

To The Kind Heart Who Encouraged Me And Helped Me To Stand After I Fail.
Friends And Family.

For All Those And More, I Present This Research As Gift Packed With Love And
Gratitude. For All That You Are Doing And Did For Me.

Acknowledgement

Our ship finally landed at one of the knowledge learning shores. To announce the end of a fabulous stage of our life that forever will be with us.

Here we are standing in front of you with teary eyes and hopeful smiles to thank you from the bottom of our heart for your effort, time and knowledge.

Words fail to describe our gratitude and thanks for those who contributed in our learning process from the start till now.

For those who stood, encourage and guided us into achieving this result.

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For all my respect and gratitude.

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Abstract

A pressure vessel is defined as a container with a pressure differential between inside and outside. The inside pressure is usually higher than the outside pressure. High pressure rise is developed in the pressure vessel and pressure vessel has to withstand severe forces. So the selection of pressure vessel is most critical.

In Sudan pressure vessel industry is limited to domestic LPG containers. This is due to the fact that higher capacity pressure vessel should be fabricated from alloy steel which are not available in the local market. In this research an attempt was made to design 1.75 MPa, 3.75 cubic meter LPG vessel made of Mild steel. The design was carried as per ASME BOILER & PRESSURE VESSEL CODE Sec VIII and was verified using ANSYS package. The dimension obtained was 2000 mm length and 1400mm diameter using 15 mm thickness St 37-2 Mild steel Sheets. The factor of safety came to be equal to 1.2.

The study concluded that LPG pressure vessels could be made of Mild steel for sizes up to 1400 mm diameters with different volumes using different lengths.

التجريدة

تعرف خزانات الضغط بأنها خزانات يختلف فيها الضغط الداخلي والخارجي للخزان، عادة ما يكون الضغط الداخلي ذو قيمة اكبر من قيمة الضغط الخارجي. تنشأ زيادة كبيرة في الضغط في الخزان ويجب ان يتحمل الخزان قوي شديدة وبالتالي يكون اختيار خزان الضغط الاكثر حرجا.

في السودان نجد ان صناعة خزانات الضغط المرتفع محصورة فقط في صناعة احجام الاستخدام المنزلي، ويرجع ذلك لحقيقة ان الاحجام الكبيرة يجب ان تصنع من الفولاذ السبائكي الذي هو غير متوفر في السوق المحلي. في هذا البحث تمت محاولة لتصميم خزان بضغط بقيمة 1.75 MPa وحجم يبلغ 3.75 متر مكعب هذا الخزان مصنع من الحديد الطري . المرجع الرئيسي لهذا التصميم ASME BOILER & PRESSURE VESSEL CODE Sec VII

وتم تحليل النتائج باستخدام ANSYS package

الابعاد المتحصل عليها من الدراسة هي: طول الخزان بقيمة 2000 ملمتر، وقطر يبلغ 1400 ملمتر باستخدام الواح من St 37-2 بسمك يبلغ 15 ملمتر، ووجد ان معامل الامان قيمته 1.2.

توصلت هذه الدراسة الي ان خزانات الضغط المستخدمة للغاز الطبيعي يمكن تصنيعها من الحديد الطري بقطر حتي 1400 ملمتر بحجوم مختلفة مع اطوال مختلفة.

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