

Pargett, Douglas

From: onbehalfof+ckitts+scu.edu@manuscriptcentral.com on behalf of ckitts@scu.edu
Sent: Tuesday, July 05, 2011 7:52 PM
To: Pargett, Douglas
Cc: TMech@me.gatech.edu; gwyn.griffiths@noc.ac.uk; ychen@zju.edu.cn; bsb@hawaii.edu; Kirkwood, Bill; stefanw@acfr.usyd.edu.au; Kitts, Chris
Subject: TMECH-03-2011-1550 - Transactions on Mechatronics

5 July 2011

Dear Mr. Pargett:

Your paper submitted to the IEEE/ASME Transactions on Mechatronics,

ID: TMECH-03-2011-1550

Title: Design and Fabrication of a Cast Titanium Sphere for 4000m Ocean Depth Paper Type: Focused Section

has been reviewed by the Editor and selected Reviewers. Their comments and suggestions are below and/or in separate files which may be read by going to your Author Center.

On the basis of the reviewers' ratings and comments, I regret to inform you that your paper cannot be published in the Transactions.

Due to a large increase in paper submissions to the Transactions, we can only accept papers that are scored in the top 25% of submissions; the acceptance rate for the Focus Section on Marine Mechatronic Systems is even lower than this. Selections for the Focus Issue are based on quality of the submission, the appropriateness of the paper in terms of scope (as per the CFP, papers should ideally contain both theoretical and experimental contributions), and the ability of the paper to contribute to a balanced Focus Issue.

If you plan to resubmit your paper to a general issue of the Transactions, please explain how the paper has been revised to address critical concerns raised by the reviewers, and provide a list of statements about changes made in the paper and on how the reviewers' comments are addressed.

We thank you for your interest in the IEEE Transactions on Mechatronics, and hope that you will consider submitting future papers here. If you have any related concern, do not hesitate to contact me.

Sincerely yours,

Christopher Kitts, Lead Guest Editor
Ying Chen, Guest Editor
Stefan Williams, Guest Editor
Brian Bingham, Guest Editor
Bill Kirkwood, Guest Editor
Gwyn Griffiths, Guest Editor
Focus Issue on Marine Mechatronic Systems Transactions on Mechatronics

Technical Editor
Comments to the Author:

Not all reviewers agreed to publish the paper. Comparing with many titanium spheres of DSV have been produced before, there no much interesting things found in the paper. That is, the titanium sphere fabrication is not critical for the DSV today. The references and the background info are not sufficient.

REVIEWERS' SUGGESTIONS:

Reviewer: 1

WHAT ARE THE CONTRIBUTIONS OF THIS PAPER: This paper is of technical value because it is presented in very much detail.

Reviewer: 2

WHAT ARE THE CONTRIBUTIONS OF THIS PAPER: In this paper, The author just tells people he have design a titanic alloy sphere under some stress conditions.

Reviewer: 3

WHAT ARE THE CONTRIBUTIONS OF THIS PAPER: Described the design and fabrication of a Cast Titanium Sphere for 4000m Ocean Depth

Reviewer: 1

WHAT ARE SOME WAYS IN WHICH THE PAPER COULD BE IMPROVED: see comments to author.

Reviewer: 2

WHAT ARE SOME WAYS IN WHICH THE PAPER COULD BE IMPROVED: In this paper, The auther just told people what he did then and haven't told people why he must do it like that.

Reviewer: 3

WHAT ARE SOME WAYS IN WHICH THE PAPER COULD BE IMPROVED: Add more background info, challenges and issues, relevant work and references.

Reviewer: 1

Comments to the Author

The arguments to develop a spherical Ti-6Al-4V housing, greater than one meter in diameter, for use up to 4000m depth are sound and the decision to fabricate from near-net-shape Ti-6Al-4V castings is reasonable. From a technical point of view, this is less challenge than the design and fabrication of manned spherical shell for the deep manned submersibles like ALVIN, Nautil, Shinkai6500 and JIAOLONG. However, the paper is of very important value to the readers in that the author has provided a very detailed description to the whole process of designing, fabricating and testing. This has touched most of the technical problems encountered in producing a titanium sphere.

However, there are two weak points in the presentation. One is related to the design factor. From this reviewer's point of view, the design factors are in the safe side in comparing with some of the existing designs of deep manned spherical shell, see Ref.[1]. However, due to the fact that the current classification rules are quite different [2] and also the analysis methods are different [3], it would be very useful for the readers if the author could provide the source where design factors come from or provide more explanations if these are defined by the author. The other is related to the testing standard. The author mentioned in the paper that the finished pressure housing would pass the 41.4 MPa hyperbaric test. Where does this standard come from? What is the criterion for pass? I wish the author provides more explanations to these two points.

In overall the paper is well written with few minor mistakes pointed out in the following. It is recommended for publication after the modification of the above two main points and the correction of the following minor points.

(1) Line 3 in the last paragraph of section II: "Much of these those development activities", delete "those".

(2) Page 2 line 56 in the left column, "Note that by design; all the stresses in the sphere are compressive", this sentence is incomplete.

(3) Page 2 line 38 in the right column, "using differing methods" may be "using different methods";

(4) Page 5 line 5 in the left column, Mpa should be MPa.

(5) Page 5 line 24 in the left column, Gpa should be GPa.

(6) Page 5 line 32 in the right column, "greater that 1m" should be "greater than 1m".

(7) X. "CONCLUSION" may be changed to Summary.

Additional references

[1] Pan, B.B., Cui, W.C. , Shen, Y.S., Liu, T. (2010). Further study on the ultimate strength analysis of spherical pressure hulls, Marine Structures, Vol.23, No.4, 444-461.

[2] Pan, B.B., Cui, W.C. (2011). A Comparison of Different Rules for the Spherical Pressure Hull of deep manned submersibles, Journal of Ship Mechanics, 15 (3) : 276-285.

[3] Pan, Binbin and Cui, Weicheng (2010). An overview of buckling and ultimate strength of spherical pressure hull under external pressure, Marine Structures 23: 227-240.

Reviewer: 2

Comments to the Author

As a paper, The author should tell people what kinds research works he have finished, and used what kinds of method to figure out the key problem.

Reviewer: 3

Comments to the Author

Real-time robotic sampling of ocean bacteria occurs with an Environmental Sampling Processor. Current deep depth housing designs are smaller in dimension (400mm glass sphere) which would require a redesign of the ESP. Designing a larger diameter sphere to fit the current sized ESP and accompanying instruments would be much easier than redesigning the ESP.

FEA was completed to design a structure which could withstand 4000m depths. The sphere was cast and tested with results congruent with design specifications. All analysis was completed with static forces governing the failure points. Dynamic loading can easily increase the loading on the surface. Article does not mention any tests of dynamic loading or real-world protection from such a case. Deployment of up to 1800m has been successful. Real-world testing up to the rated depths has not been completed to determine if the design process can predict the true conditions present.

Need to add more background info, challenges and issues, relevant work and references.

All of the pictures are at the end of the article though referenced throughout the text. In order to understand the text, flipping between the article and image page was required.