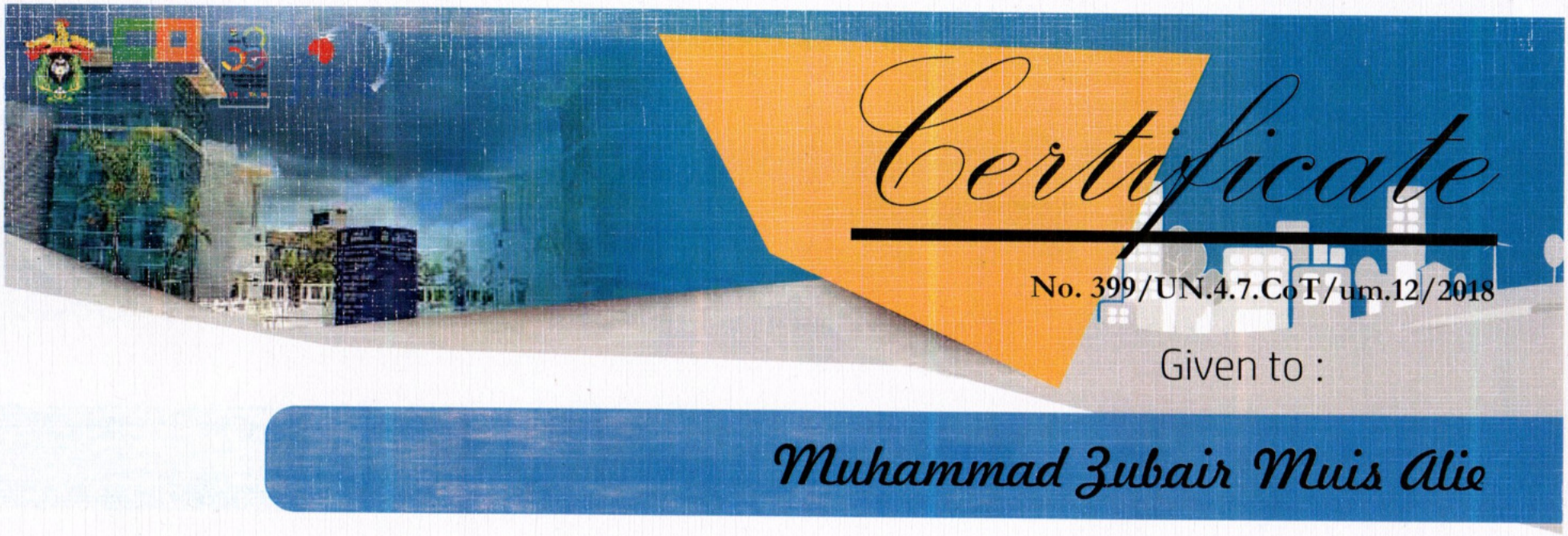

Certificate

No. 399/UN.4.7.CoT/um.12/2018

Given to :

Muhammad Zubair Muis Alie

As Presenter

On end The 2nd EPI International Conference on Science and Engineering (EICSE2018)
by theme "Strengthening UIG based collaborations in anticipating
the era of industry disruption 4.0"
held at Gowa, October 23rd - 24th, 2018.

Gowa, Octobe 24th, 2018

Dr. Ir. Muhammad Arsyad Thaha, M.T.	Dr.Eng Nasruddin Junus, S.T., M.T.	Dr. Faisal Mahmuddin
Dean of Engineering Faculty, UNHAS	COT Head, Engineering Faculty, UNHAS	Conference Chair EICSE2018

Februari 15, 2019

MANUSCRIPT REVIEW RESULTS

ID	EPI1821
Title	Ultimate Strength Analysis of FPSO Hull Girder Under Longitudinal Bending
Author (s)	M Zubair Muis Alie, Risky Iriani, Juswan, M Iqra Ramadhan
Corresponding Email	zubair.m@eng.unhas.ac.id
Status	Accepted with minor revision
File Attachment	Yes [x] No [ ]
General Reviewer Comments	- More detail explanation of results in section 4 are needed - Please refer to word file for detail corrections
Response	- Some explanation has been added in the article in section 4 - Some correction has been made based on the reviewer comments

Februari 15, 2019

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September 11, 2018

INVITATION LETTER

Dear Mr. Muhammad Zubair Muis Alie

We are pleased to inform you that your paper submitted to the 2nd EPI International Conference on Science and Engineering (EICSE2018) below is accepted for oral presentation:

Title	**:**	**Ultimate Strength Analysis of FPSO Hull Girder under Longitudinal Bending**
Author(s)	**:**	**Muhammad Zubair Muis Alie, Risky Iriani, Juswan, Muhammad Iqra Ramadhan**
Institution	**:**	**Departement of Ocean Engineering/Ocean Structure Analysis Research Laboratory, Engineering Faculty, Hasanuddin University, Gowa, Indonesia**

We kindly invite you to attend the IECSE2018 that will be held on October 24, 2018 at Engineering Faculty Campus, Gowa, South Sulawesi, Indonesia. Your presence at the event would be a really great honor. This letter is being sent to you to complete any administrative requirement for attending the meeting.

Sincerely Yours,

Dr. Faisal Mahmuddin
Conference Chair

Ultimate Strength Analysis of FPSO Hull Girder Under Longitudinal Bending

Muhammad Zubair Muis Alie[1]*, Risky Iriani[1], Juswan[1], M Iqra Ramadhan[2]

[1]Departement of Ocean Engineering/Ocean Structure Analysis Research Laboratory, Engineering Faculty, Hasanuddin University
[2]PT. PAL Indonesia, Surabaya, East Jawa, Indonesia

*E-mail: zubair.m@eng.unhas.ac.id

Abstract. Ship and offshore structures have become the key for the development of the offshore world. Production and processing equipment can be placed on a platform, ship and/or barge structure called FPSO (floating, production, storage, and offloading units). The FPSO's hull works like a beam and deforms in the vertical plane. In this case, weight and bouyancy are not normally distributed and wave loading. It is necessary to know the extreme value of each type of loading to find the maximum tension and compression stress on the deck and bottom part. The most important aspect of FPSO (Floating Production Storage and Offloading) structure is the materials and structural strength used in the design. The critical condition of FPSO is when the structure is under the operation so that the structure needs to be analysed for the design requirement. In the present study, the ultimate strength of FPSO hull girder under longitudinal bending moment is analysed using numerical approach. The nonlinear finite element analysis is adopted to handle the calculation. For the simple case, the one-frame space and the fully cross section of FPSO are modeled. The quadrilateral shell element of the nonlinear method is used for meshing. By performing the boundary condition with the Multi Point Constraint (MPC) is applied where the neutral axis located. The vertical bending moment is also placed at this point (MPC) and it is connected to the all nodes at both sides of the cross sections. The ultimate strength of FPSO is calculated only for intact in hogging and sagging conditions. The ultimate strength analysis is represented in terms of the moment-curvature relationship for hogging and sagging. The result obtained the nonlinear finite element analysis is compared with Smith's method including their collapse behavior. It is found that the comparison result of the ultimate strength is about 8.9% and 10.1% in hogging and sagging condition, respectively. It is shown that the nonlinear finite element analysis is in good aggrement with the analytical solution performed by Smith's method.

1. Introduction

The FPSO's system has become the principle method in offshore oil and gas production sites in the world. Offshore units in the form of ships having a variety of benefits when compared to other types of structures in terms of sufficient work areas, deck load, high storage capability, structural strengths, shorter waiting times, building costs, and suitability for conversion and reuse. However, similar to other floating platform types, the replacement volume below the water line is relatively large, and the response and structural failures under extreme environmental conditions are associated with waves,

winds, and significant problems to consider in design and operation. These items must considered for the requirement of strucutral design.

The ultimate strength analysis of ship's hull has been done by many researchers. The asymmetrically damaged ship under sagging condition was investigated by Muis Alie [1]. A plate and/or stiffened plate element at the specified location so-called "critical element" reached its ultimate strength which represent that the hull girder strength also attained the ultimate strength. Tekgoz et al. [2] analyzed a container ship under asymmetrical bending taking the influence of structural damage and associated neutral axis translation and rotation of the residual load carrying capacity. The FE analysis was used and a formulation based on the Common Structural Rules (CSR). The ship was analyzed in intact and damaged condition. The assessment of the ultimate strength for Ro-Ro ship after damage was conducted by Muis Alie et al. [3]. The example of the calculation focused on the cross section. The side shell of the hull and bottom part were assumed to be damaged by simply removing those elements on that part. The result of analytical solution was compared for intact and damage under hogging and sagging conditions.

Kim and Paik [4] expanded a full automated method to optimize design for hull structural scantling of merchant cargo ships and the plate-shell were used for modelling. To minimize the structural weight and maximize structural safety, the technique for full optimization with multi-objectives was used based on the design constraint related to the ultimate limit states of the plate panels, support members and hull girders. The procedure of development was implemented to the hull structure of VLCC, the procedure's capacity is shown by this test for requirement of common structural rules. Gaspar et al. [5] evaluated the influence of the nonlinear vertical wave-induced bending moments on the ship hull girder reliability. A chemical tanker for which the nonlinearity of the vertical wave-induced bending moments was found to be significant was adopted as case study.

Muis Alie et al. [6] used Finite Element Method to analyze the ultimate strength of asymmetrically damaged ships. The collision damage was simply created and remove the elements on that part. The comparison between FE analysis and analytical solution was done including their collapse behavior of ship's hull. Ultimate limit state-based ultimate longitudinal strength analysis was performed by Park et al. [7] to identify the operability of aged non-ice class ships in the Arctic Ocean considering aging. The hull girder ultimate strength was verified by Garbatov et al. [8] based on the class society and the result obtained by experiment and dimensional theory.

An analytical method was proposed by Gao et al [9] for rapidly predicting response of FPSO side structures in case of being struck by a ship with rigid bulbous bow. The proposed was developed by combining several primary failure models of major double shell members, including the plate punching model, the plate perforating model, the plate denting model, the plate tearing model and the X-shaped structure crushing model. The residual strength analysis of ship with bottom damage was conducted by Muis Alie [10] taking the fully cross section into consideration and using the nonlinear finite element method.

In the present study, the ultimate strength analysis of FPSO hull girder is conducted using the nonlinear finite element method. The cross section and one-frame space of the FPSO are taken for the calculation, and those are modeled by 3D finite element method. The model is created by using shell element. Both two sides of the cross section are attached Multi Point Constraint (MPC) and at this point the moment is applied. The result obtained by nonlinear finite element analysis is compared to the analytical solution.

2. Method of Analysis

The shape configuration and properties of the FPSO' cross section are summarized in Table 1, Table 2 and Figure 1, respectively, as follow:

Table 1. Sections properties of FPSO

Items	Unit (N,mm)
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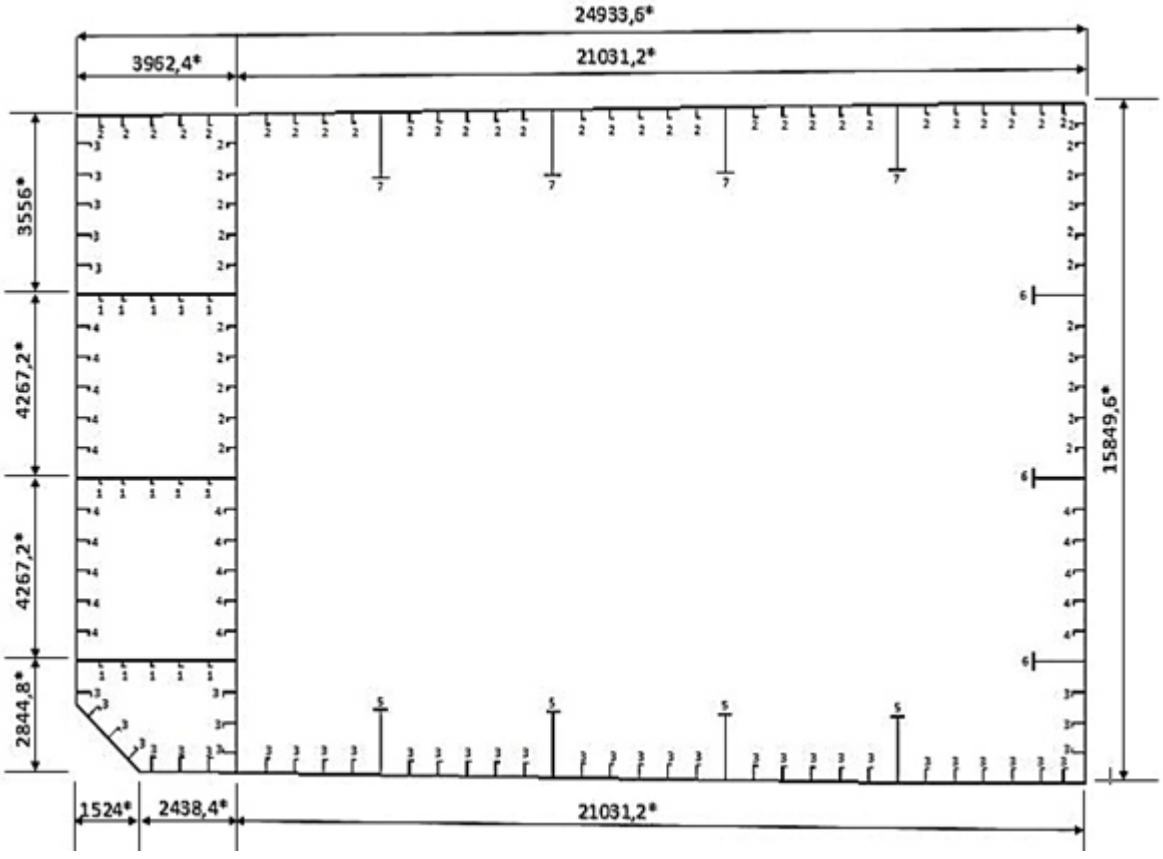
6	1270 x 203,2 + 14,288 x 25,4	Tee Bar	*
7	1524 x 304,8 + 15,875 x 25,4	Tee Bar	*



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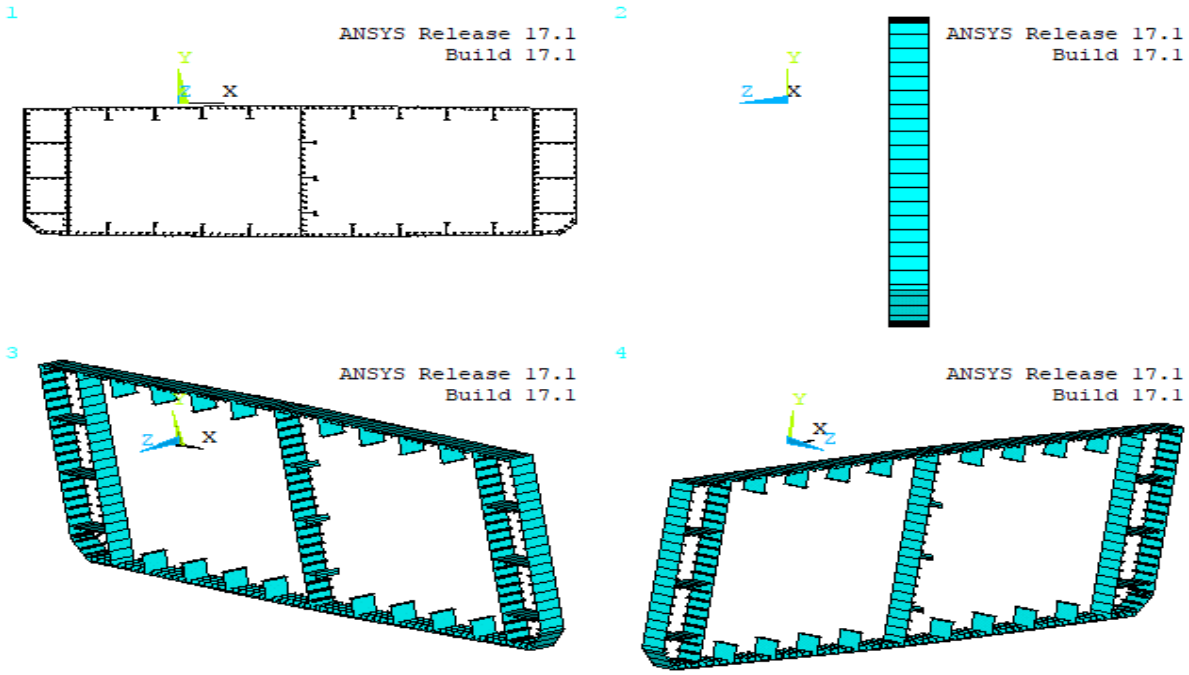

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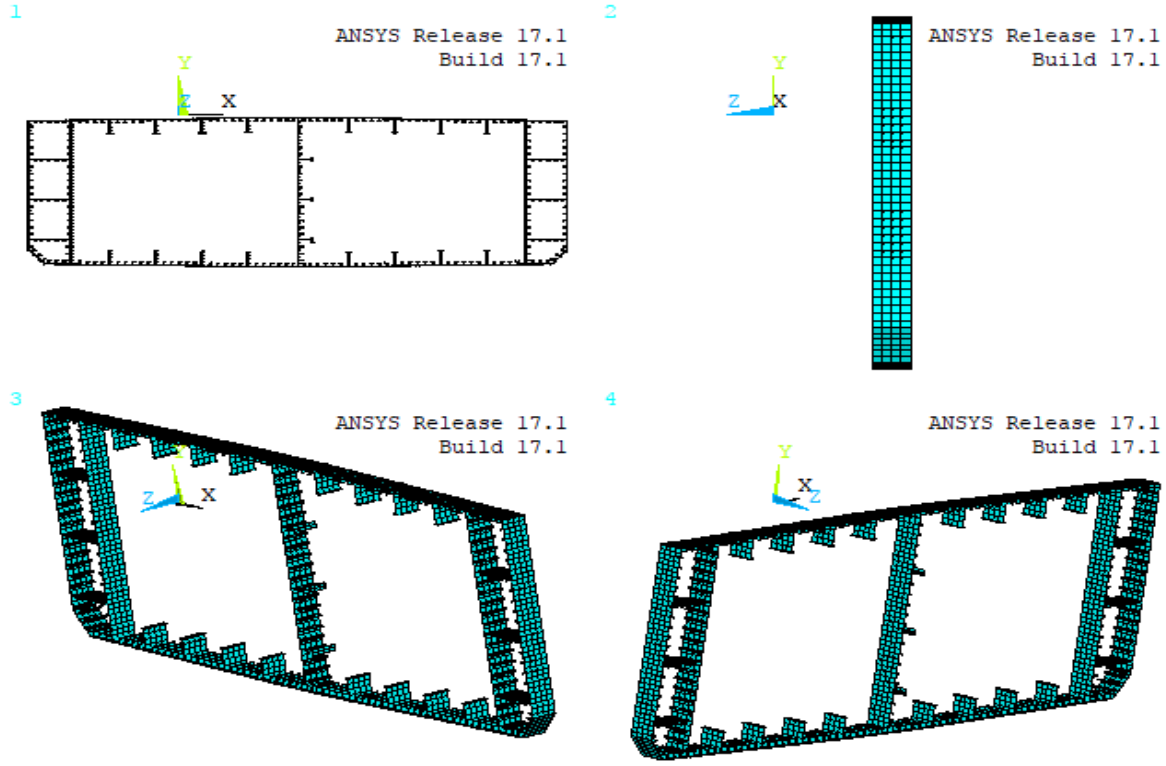

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Figures 2 and 3 show the finite element modelling and meshing size together with their coordinate systems. In this model, the shell element type is used and generated to all area. The application of Multi Point Constraint (MPC) can be seen in Figure 4 as follow,

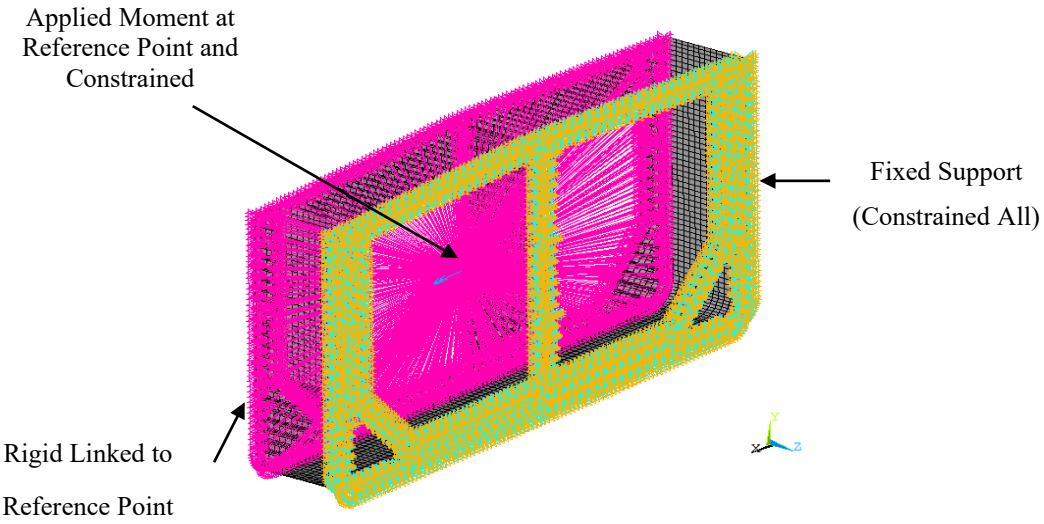

Figure 4. Boundary Condition

4. Results and Discussions

Figures 5 and 6 show the stress distributions on the ultimate strength in hogging and sagging conditions, respectively. Tension occurs on deck part when the cross section is under hogging condition. While compression is placed on the bottom part when the cross section is under sagging. MX symbol indicates that value is maximum on that part.

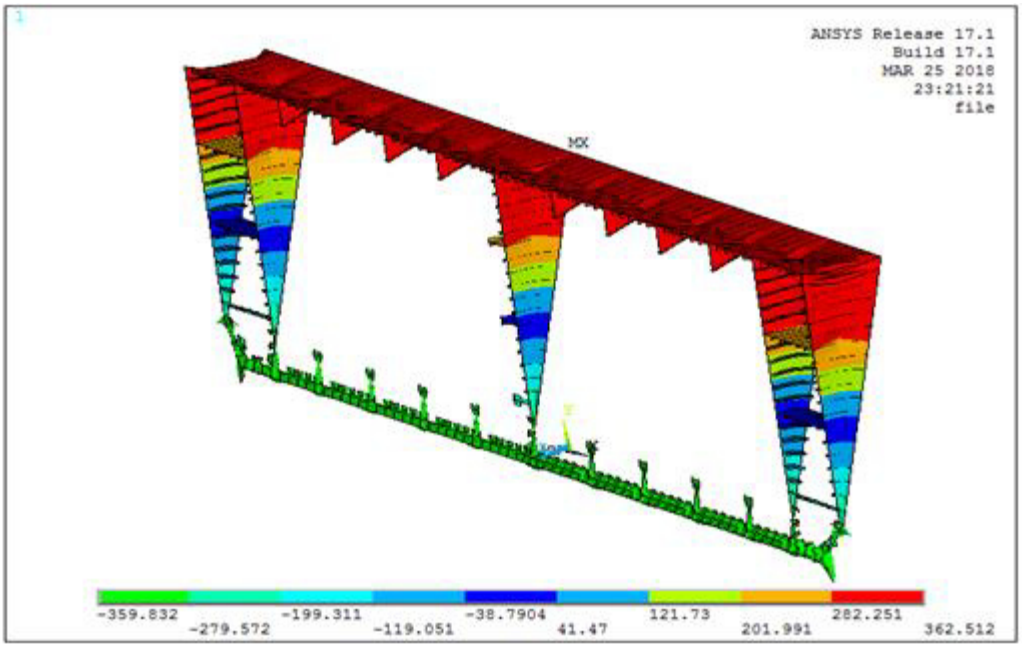

Figure 5. Ultimate Strength in Hogging Condition

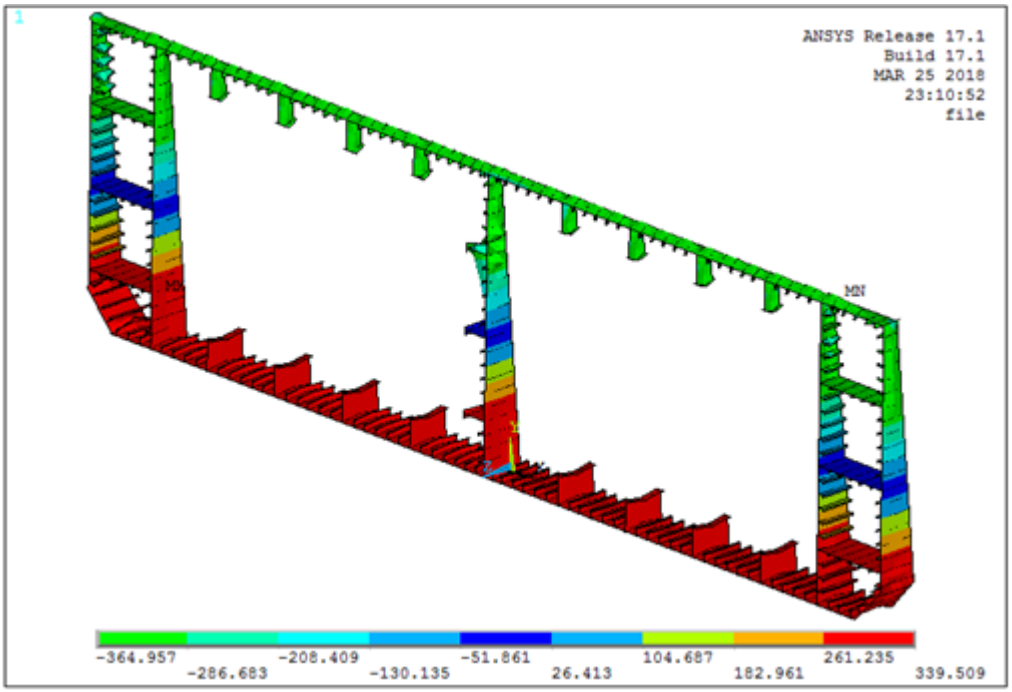

Figure 6. Ultimate Strength in Sagging Condition

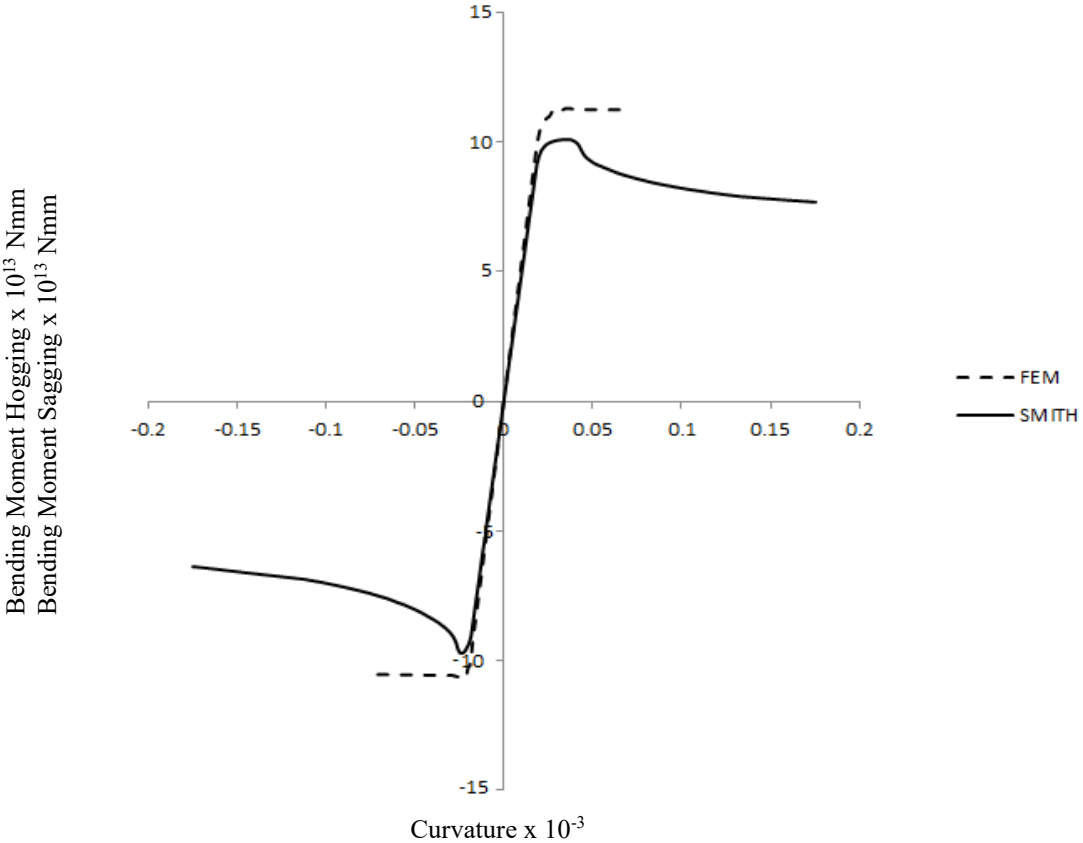

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Figure 7 shows the comparison of the ultimate strength obtained by nonlinear finite element analysis and Smith's method. The ultimate strength for the nonlinear finite element method is represented by the dot line and the solid line for Smith's method. It should be noted that the FE analysis considers many elements to construct the model. Therefore, the stress distribution spreads to all the elements. However, the bending stiffness both two methos are identic. The section modulus between deck and bottom is also different. This is marked by the distance from the neutral axis to deck and bottom. Therefore, generally, this behavior where the ultimate strength in hogging condition is always larger than sagging condition. It is also observed that the ultimate strength in hogging and sagging condition are different due to the redistribution of the stress concentration in the FE model.

5. Conclusion

The ultimate strength analysis of FPSO has been conducted using the nonlinear finite element method, the following conclusion is that the ultimate strength in terms of the moment-curvature relationship obtained by using nonlinear finite element analysis is in good aggrement with the analytical solution performed by Smith's method.

References

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Ultimate Strength Analysis of FPSO Hull Girder Under Longitudinal Bending

Muhammad Zubair Muis Alie[1]*, Risky Iriani[1], Juswan[1], M Iqra Ramadhan[2]

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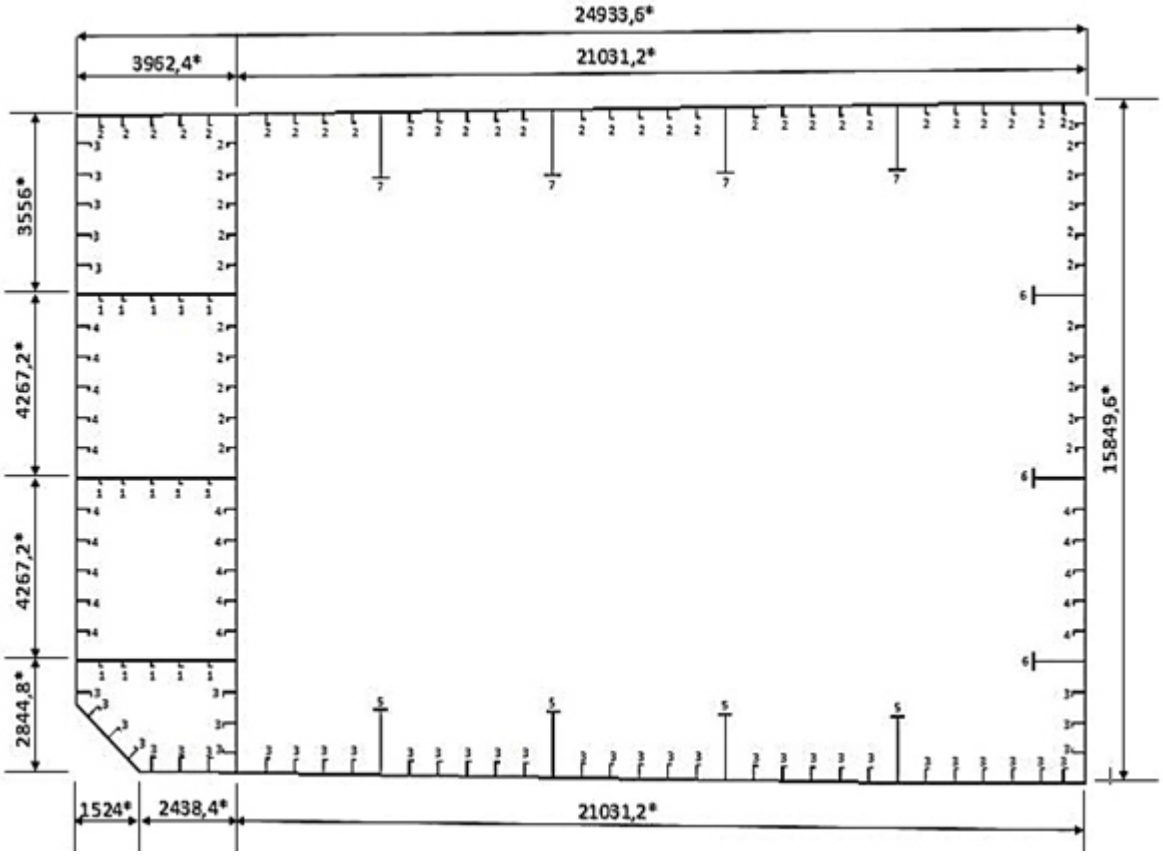

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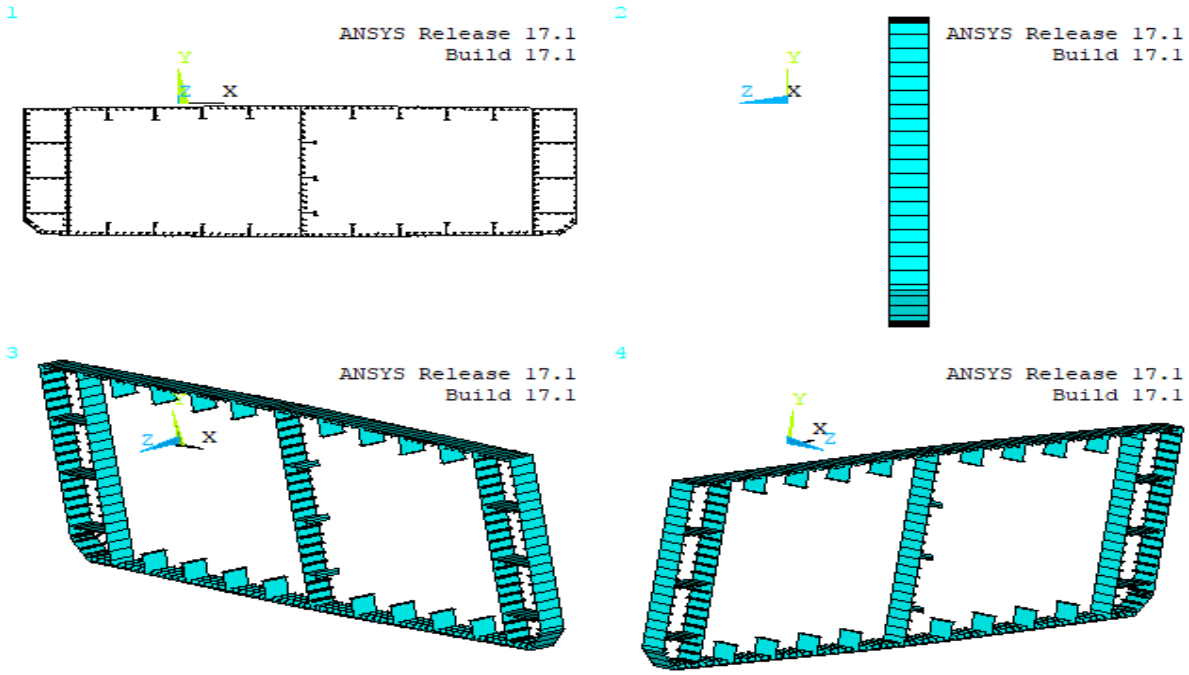

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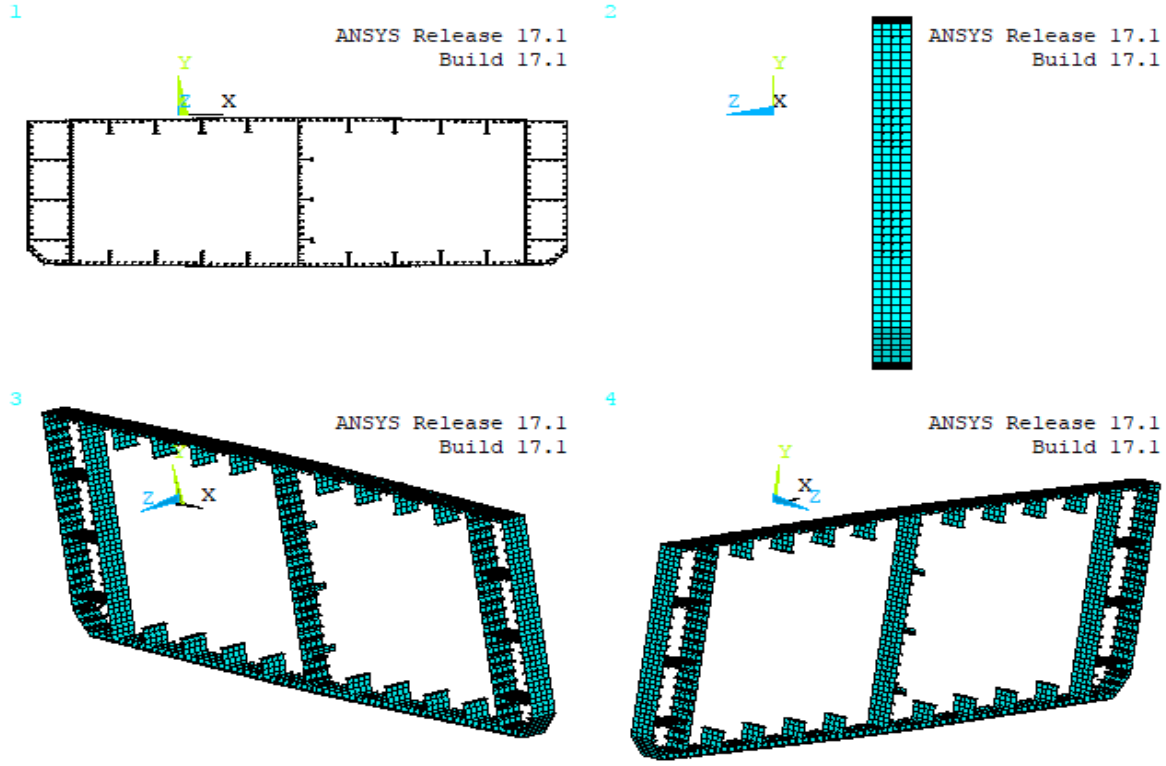

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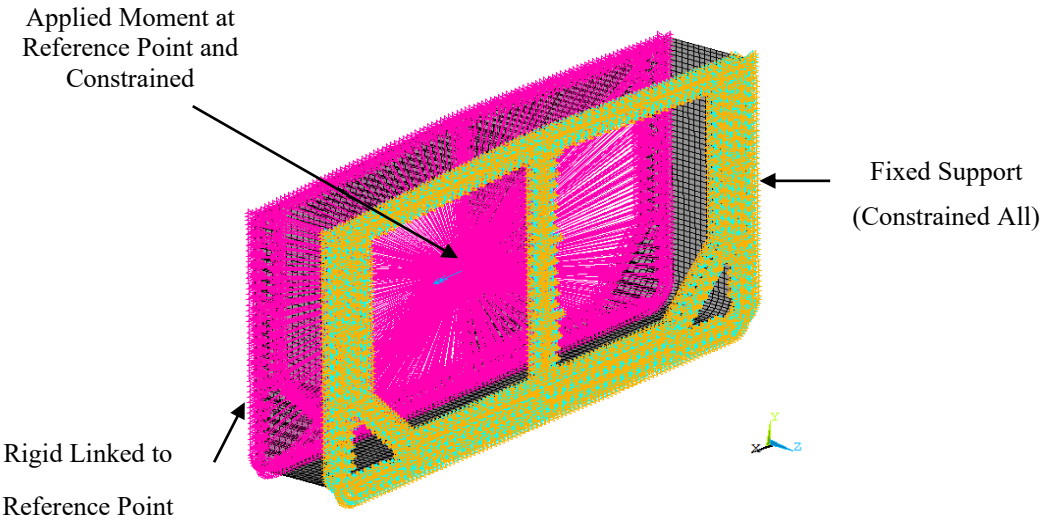

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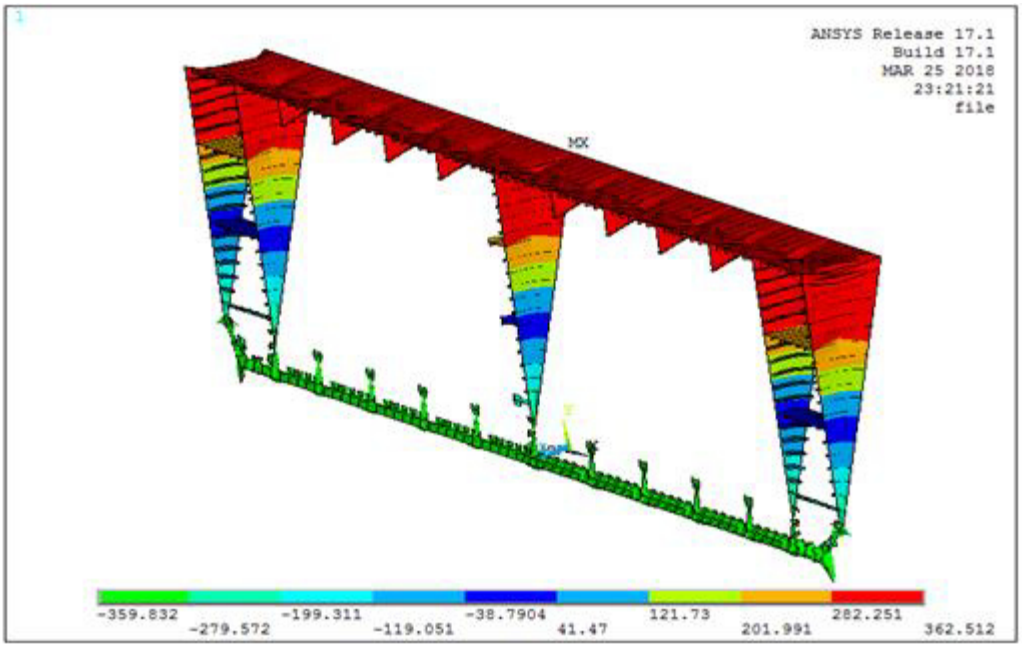
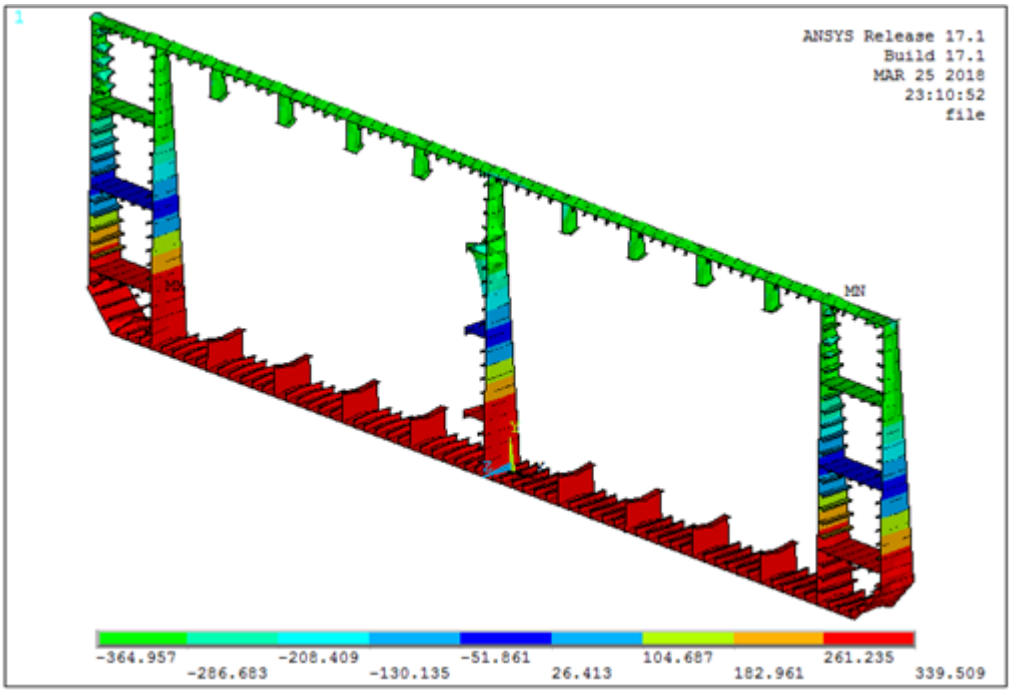


Figure 5. Ultimate Strength in Hogging Condition



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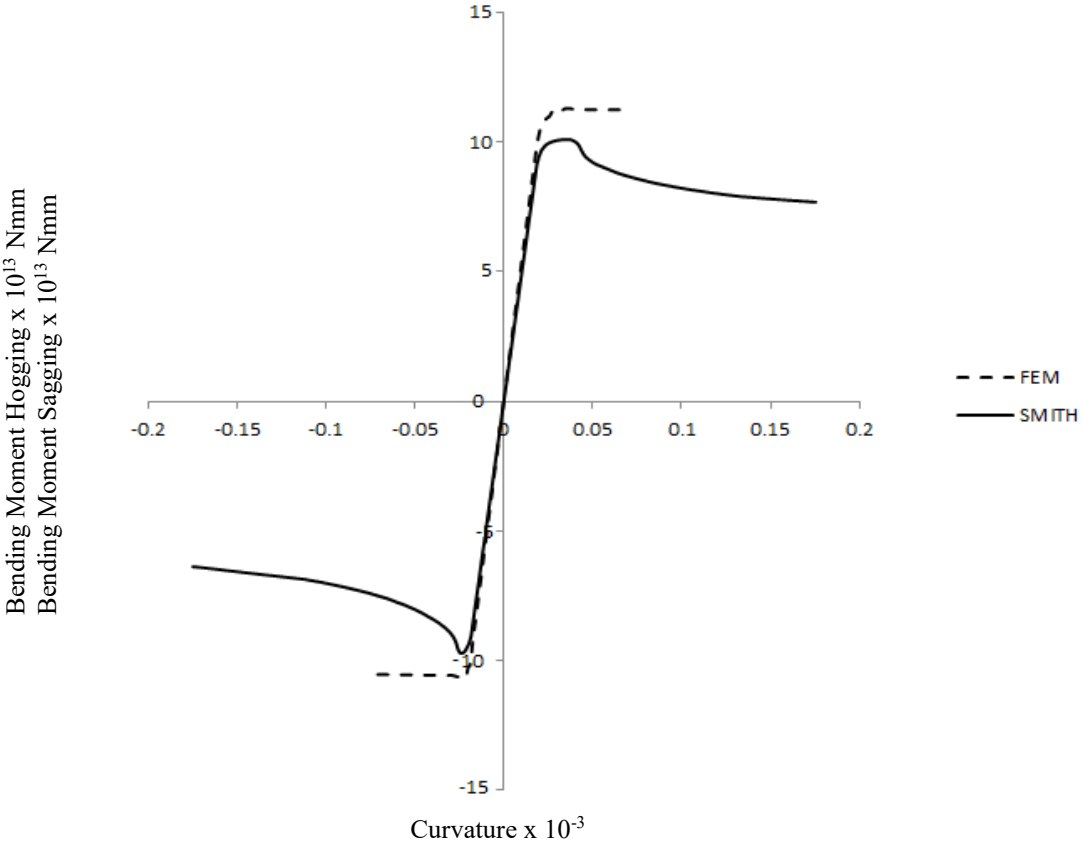

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Ultimate Strength Analysis of FPSO Hull Girder Under Longitudinal Bending

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Abstract. Ship and offshore structures have become the key for the development of the offshore world. Production and processing equipment can be placed on a platform, ship and/or barge structure called FPSO (floating, production, storage, and offloading units). The FPSO's hull works like a beam and deforms in the vertical plane. In this case, weight and bouyancy are not normally distributed and wave loading. It is necessary to know the extreme value of each type of loading to find the maximum tension and compression stress on the deck and bottom part. The most important aspect of FPSO (Floating Production Storage and Offloading) structure is the materials and structural strength used in the design. The critical condition of FPSO is when the structure is under the operation so that the structure needs to be analysed for the design requirement. In the present study, the ultimate strength of FPSO hull girder under longitudinal bending moment is analysed using numerical approach. The nonlinear finite element analysis is adopted to handle the calculation. For the simple case, the one-frame space and the fully cross section of FPSO is modeled. The quadrilateral shell element of the nonlinear method is used for meshing. By performing the boundary condition with the Multi Point Constraint (MPC) is applied where the neutral axis located. The vertical bending moment is also place at this point (MPC) and it is connected to the all nodes at both sides of the cross sections. The ultimate strength of FPSO is calculated only for intact in hogging and sagging conditions. The ultimate strength analysis is represented in terms of the moment-curvature relationship for hogging and sagging. The result obtained the nonlinear finite element analysis is compared with Smith's method including their collapse behavior. It is found that the comparison result of the ultimate strength is about 8.9% and 10.1% in hogging and sagging condition, respectively. It is shown that the nonlinear finite element analysis is in good aggrement with the analytical solution performed by Smith's method.

Keywords: FPSO, Cross section, Finite Element Method, Ultimate Strength

1. Introduction

The FPSO's system has become the principle method in offshore oil and gas production sites in the world. Offshore units in the form of ships having a variety of benefits when compared to other types of structures in terms of sufficient work areas, deck load, high storage capability, structural strengths, shorter waiting times, building costs, and suitability for conversion and reuse. However, similar to other floating platform types, the replacement volume below the water line is relatively large, and the response and structural failures under extreme environmental conditions are associated with waves,

winds, and significant problems to consider in design and operation. These items must considered for the requirement of strucutral design.

The ultimate strength analysis of ship's hull has been done by many researchers. The asymmetrically damaged ship under sagging condition was investigated by Muis Alie (2018). A plate and/or stiffened plate element at the specified location so-called "critical element" reached its ultimate strength which represent that the hull girder strength also attained the ultimate strength. Tekgoz et al. (2018) analyzed a container ship under asymmetrical bending taking the influence of structural damage and associated neutral axis translation and rotation of the residual load carrying capacity. The FE analysis was used and a formulation based on the Common Structural Rules (CSR). The ship was analyzed in intact and damaged condition. The assessment of the ultimate strength for Ro-Ro ship after damage was conducted by Muis Alie et al. (2017). The example of the calculation focused on the cross section. The side shell of the hull and bottom part were assumed to be damaged by simply removing those elements on that part. The result of analytical solution was compared for intact and damage under hogging and sagging conditions. Kim and Paik (2017) expanded a full automated method to optimize design for hull structural scantling of merchant cargo ships and the plate-shell were used for modelling. To minimize the structural weight and maximize structural safety, the technique for full optimization with multi-objectives was used based on the design constraint related to the ultimate limit states of the plate panels, support members and hull girders. The procedure of development was implemented to the hull structure of VLCC, the procedure's capacity is shown by this test for requirement of common structural rules. Gaspar et al. (2016) evaluated the influence of the nonlinear vertical wave-induced bending moments on the ship hull girder reliability. A chemical tanker for which the nonlinearity of the vertical wave-induced bending moments was found to be significant was adopted as case study. Muis Alie et al. (2016) used Finite Element Method to analyze the ultimate strength of asymmetrically damaged ships. The collision damage was simply created and remove the elements on that part. The comparison between FE analysis and analytical solution was done including their collapse behavior of ship's hull. Ultimate limit state-based ultimate longitudinal strength analysis was performed by Park et al. (2015) to identify the operability of aged non-ice class ships in the Arctic Ocean considering aging. The hull girder ultimate strength was verified by Garbatov et al. (2015) based on the class society and the result obtained by experiment and dimensional theory. An analytical method was proposed by Gao, Z et al (2014) for rapidly predicting response of FPSO side structures in case of being struck by a ship with rigid bulbous bow. The proposed was developed by combining several primary failure models of major double shell members, including the plate punching model, the plate perforating model, the plate denting model, the plate tearing model and the X-shaped structure crushing model. The residual strength analysis of ship with bottom damage was conducted by Muis Alie (2014) taking the fully cross section into consideration and using the nonlinear finite element method.

In the present study, the ultimate strength analysis of FPSO hull girder is conducted using the nonlinear finite element method. The cross section and one-frame space of the FPSO are taken for the calculation, and those are modeled by 3D finite element method. The model is created by using shell element. Both two sides of the cross section are attached Multi Point Constraint (MPC) and at this point the moment is applied. The result obtained by nonlinear finite element analysis is compared to the analytical solution.

2. Method of Analysis

The shape configuration and properties of the FPSO' cross section are summerized in Table 1, Table 2 and Figure 1, respectively, as follow:

Table 1. Sections properties of FPSO

Items	Unit (N,mm)
Breadth	49987,2

Items	Unit (N,mm)
Depth	15849,6
Density	780000
Yield Strength (*)	315
Elastic Modulus	210000
Poisson Ratio	0,3

Table 2. Stiffener dimensions of FPSO's cross section

Stiffener no.	Dimension	Type	Mark
1	125 x 75 x10	Flat Bar	*
2	250 x 90 + 12 x 16	Flat Bar	*
3	350 x 100 + 12 x 17	Flat Bar	*
4	300 x 90 + 11 x 16	Flat Bar	*
5	1524 x 304,8 + 15,875 x 25,4	Tee Bar	*
6	1270 x 203,2 + 14,288 x 25,4	Tee Bar	*
7	1524 x 304,8 + 15,875 x 25,4	Tee Bar	*

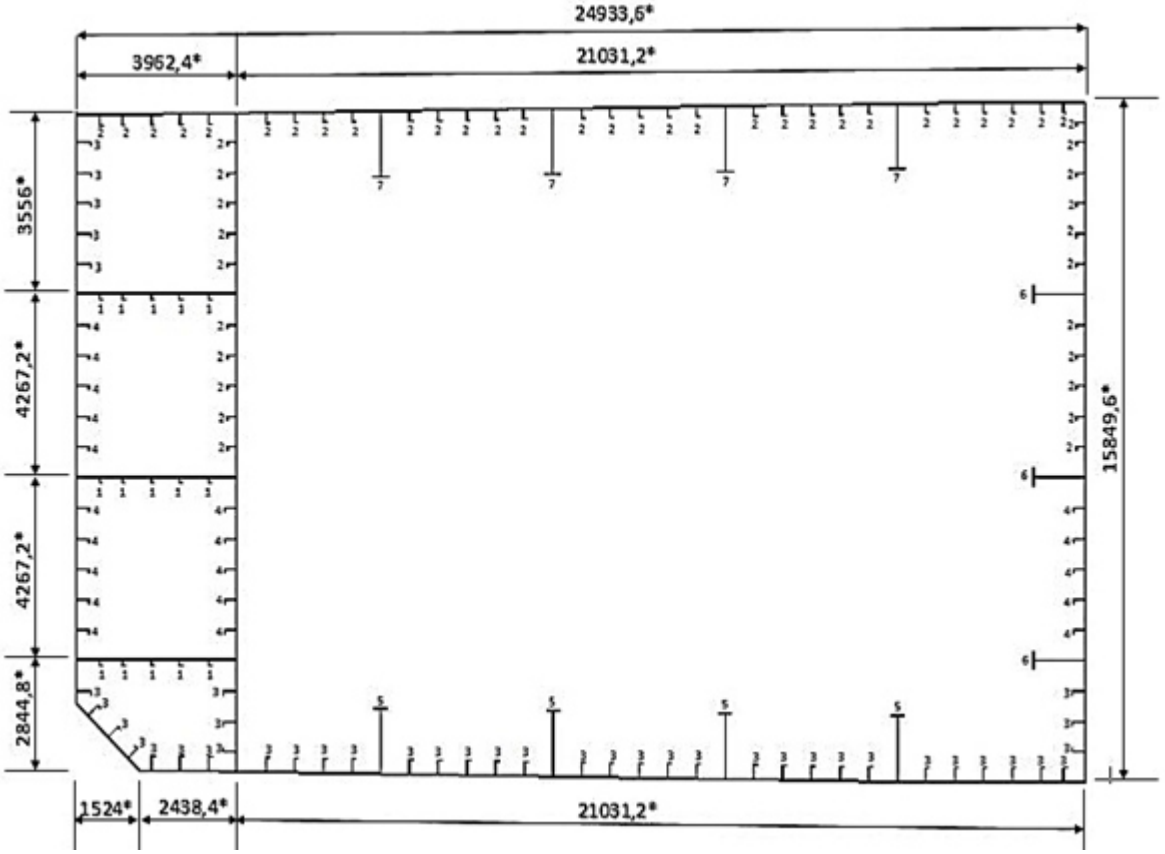

Figure 1. Cross section of FPSO

3. Finite Element Model

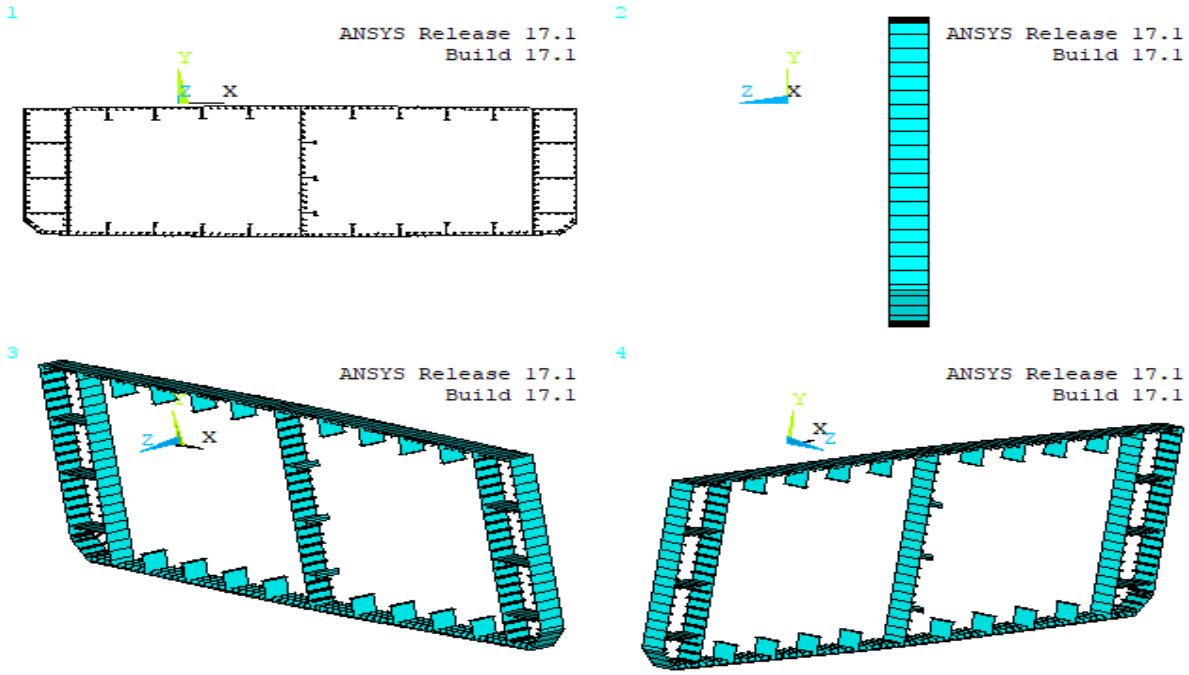

Figure 2. Finite Element Modeling

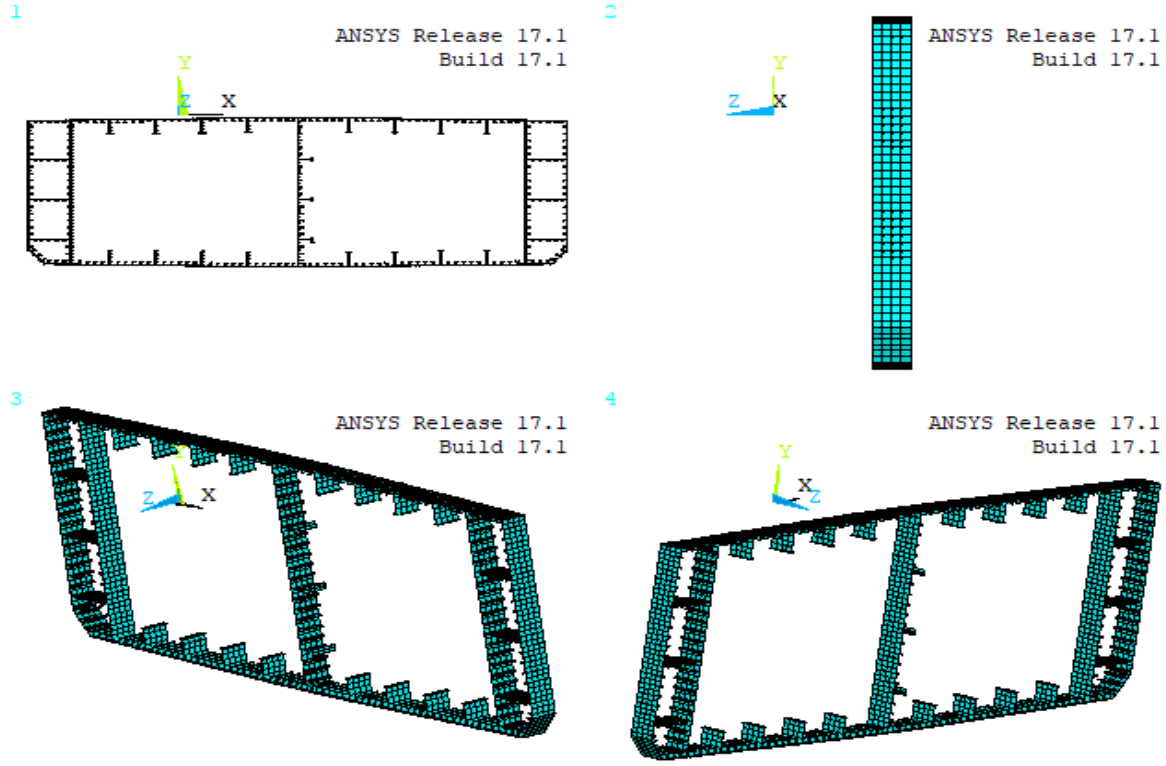

Figure 3. Meshing Size

Figure 2 and 3 show the finite element modelling and meshing size together with their coordinate systems. In this model, the shell element type is used and generated to all area. The application of Multi Point Constraint (MPC) can be seen in Figure 4 as follow,

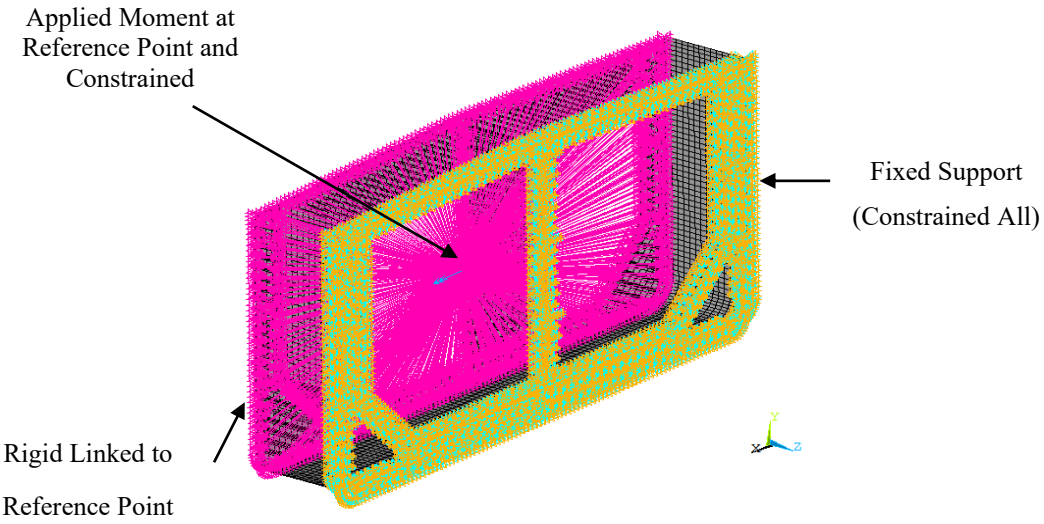

Figure 4. Boundary Condition

4. Results and Discussions

Figure 5 and 6 show the stress distributions on the ultimate strength in hogging and sagging conditions, respectively. Tension occurs on deck part when the cross section is under hogging condition. While compression is placed on the bottom part when the cross section is under sagging. MX symbol indicates that value is maximum on that part.

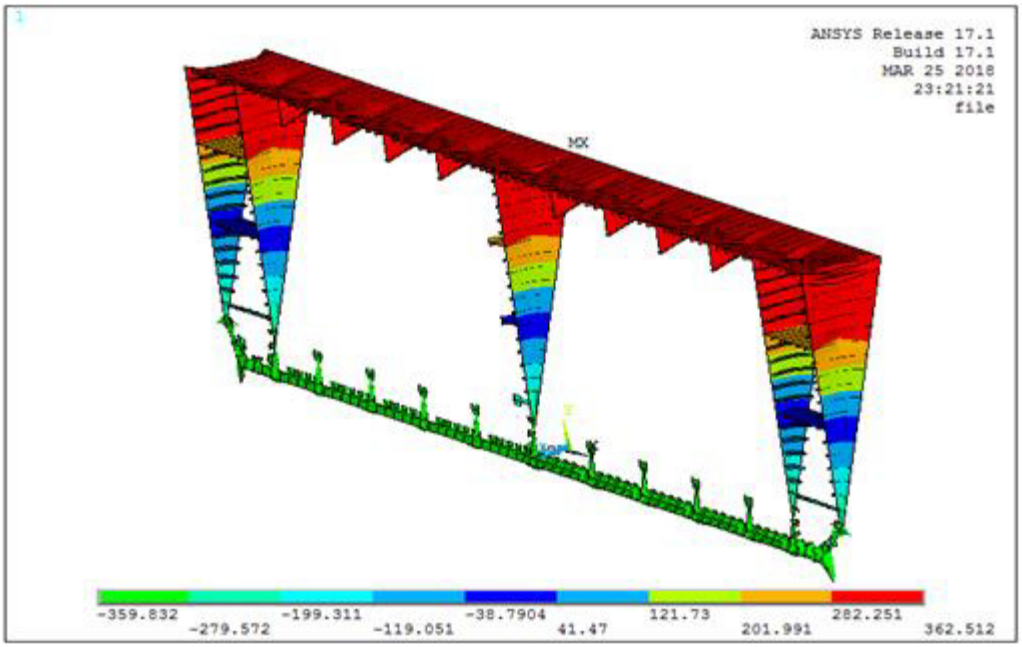

Figure 5. Ultimate Strength in Hogging Condition

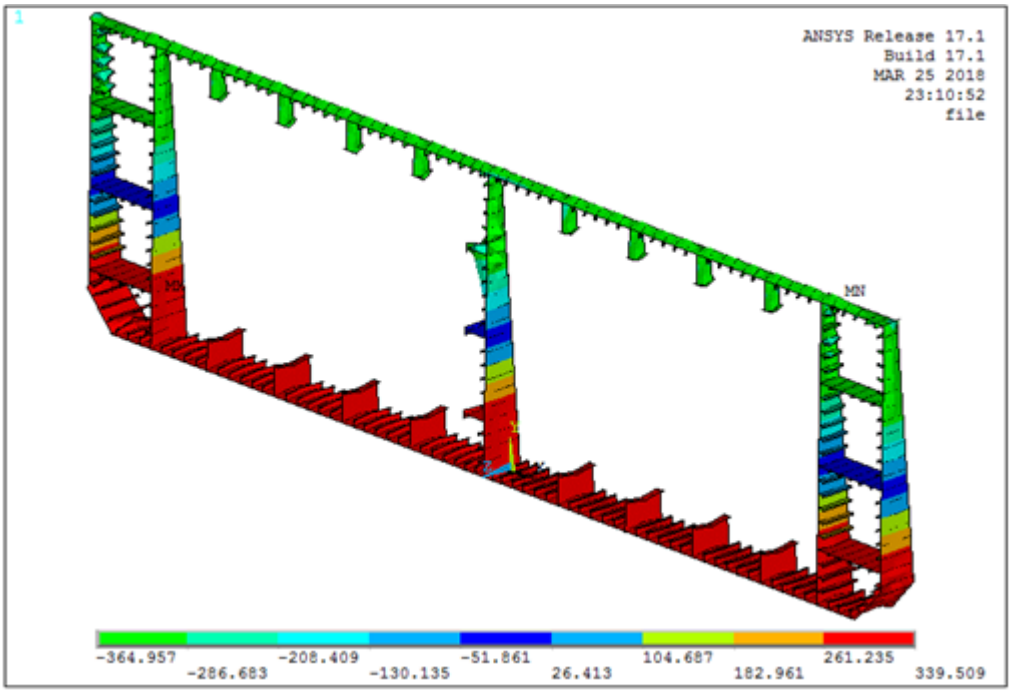

Figure 6. Ultimate Strength in Sagging Condition

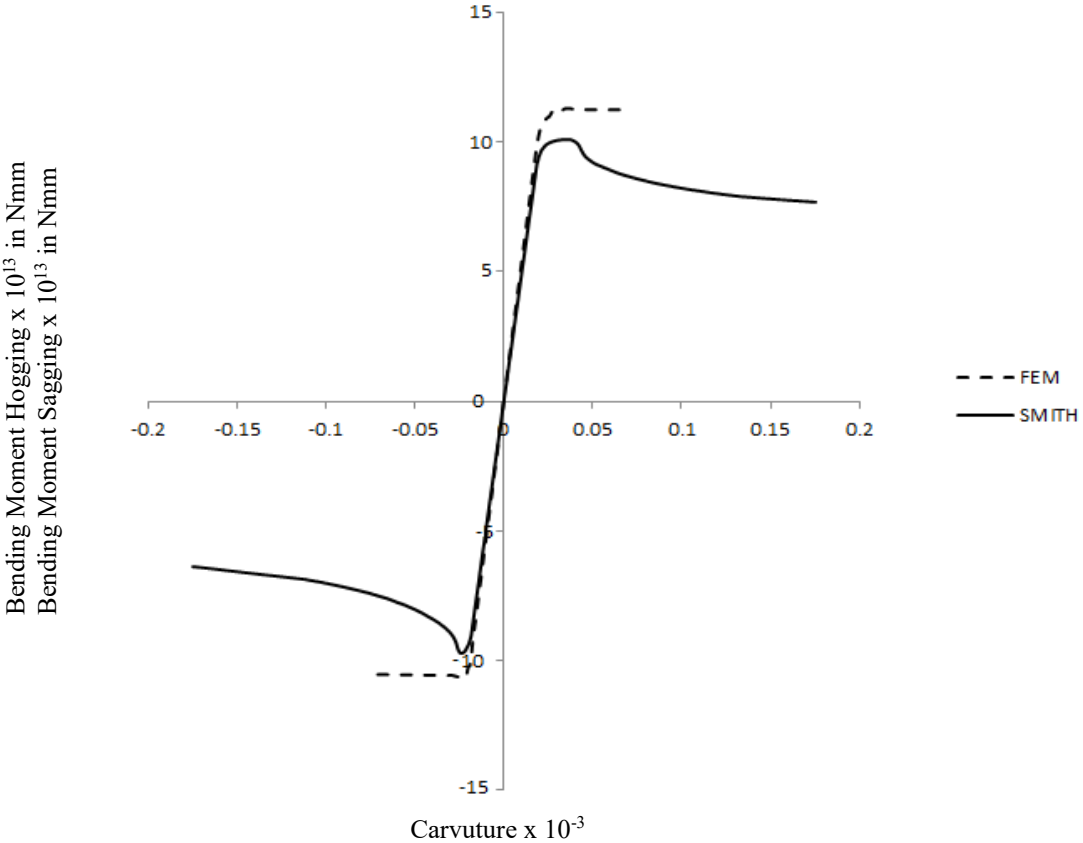

Figure 7. Comparison of the Ultimate Strength

Figure 7 shows the comparison of the ultimate strength obtained by nonlinear finite element analysis and Smith's method. The ultimate strength for the nonlinear finite element method is represented by the dot line and the solid line for Smith's method. The bending stiffness both two methos are identic. It is observed that the ultimate strength in hogging and sagging condition are different due to the redistribution of the stress concentration in the FE model.

5. Conclusion

The ultimate strength analysis of FPSO has been conducted using the nonlinear finite element method, the following conclusion is that the ultimate strength in terms of the moment-curvature relationship obtained by using nonlinear finite element analysis is in good aggrement with the analytical solution performed by Smith's method.

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The 2nd EPI International Conference on Science and Engineering 2018 (EICSE2018)

CSA Building, Engineering Faculty Campus, 24th October 2018

Conference Program

Wednesday, 24th November 2018

Time	Activities	Presenter / Person in Charge
08.00 – 08.30	Registration	OC
08.30 – 09.00	Opening Ceremony	Prof. Dr. Dwia Aries Tina Pulubuhu, M.A. Rector of Hasanuddin University
09.00 – 09.15	Break	OC
09.15 – 10.00	Keynote Speaker 1	Dr. Ir. Jumain Appe, M.Si. Directorate of Innovation Strengthening KEMENRISTEKDIKTI
10.00 – 10.45	Keynote Speaker 2	Prof. Yoshihiro Narita JICA Academic Adviser
10.45 – 11.30	Keynote Speaker 3	Prof. Ahmad Fitriadhy Universiti Malaysia Terengganu
11.30 – 12.30	Poster Session	OC
12.30 – 13.30	Lunch Break	OC
13.30 – 15.00	Parallel session 1	Moderator
15.00 – 15.30	Break	OC
15.30 – 17.00	Parallel session 2	Moderator

Presentation Schedule
The 2nd EPI International Conference on Science and Engineering 2018 (EICSE2018)
Wednesday, 24th October 2018

Room : Lecture Theatre 1

	Time	ID	Title	Presenter
Parallel Sesion 1 (13.30 - 15.15) Moderator Muh. Ansar, ST., MT., P.hD	13.30 - 13.45	EPI1805	CFD Analysis on Prediction of Towline Tension Using Bridle Towline Configuration	Ahmad Fitriadhy, Nur Adlina Aldin, Nurul Aqilah Mansor and Nur Aqilah Hanis Zalizan
	13.45 - 14.00	EPI1806	Tidal Flood in Pekalongan: Utilizing and Operating Open Resources for Modeling	Munawir Bintang Pratama
	14.00 - 14.15	EPI1807	Prediction of Propeller Performance using Computational Fluid Dynamics (CFD) Approach	Ahmad Fitriadhy, Nur Amira Adam, Kong Wai Sheng, Faisal Mahmuddin and Cj Quah
	14.15 - 14.30	EPI1808	The Effect of Hanging Sheet Pile Breakwater's Draft Relative on Wave Transmission Coeeficient (Kt) in Irregular Wave	Chairul Paotonan, Hasdinar Umar, Ahmad Yasir Baeda, Taufiqur Rachman and Wahyuni Hasan
	14.30 - 14.45	EPI1809	Study on Sc-bearing lateritic Ni deposits in ultramafic rock from Sulawesi: A new paradigm in Indonesia metal mining industry	Adi Maulana, Sufriadin Sufriadin, Kenzo Sanematsu and Masayuki Sakakibara
	14.45 - 15.00	EPI1810	Ultimate Strength Analysis of FPSO Hull Girder under Longitudinal Bending	Muhammad Zubair Muis Alie, Risky Iriani, Juswan Juswan and Muhammad Igra Ramadhan
	15.00 - 15.15	EPI1856	Characteristics of Passengers and Vehicles Cargoes In Siwa – Lasusua Route	Misliah Idrus, Wihdat Djafar, Abd Haris Djalante, Rosmani, Gabriel Mahligai
Parallel Sesion 2 (15.30 - 17.00) Moderator Muh. Ansar, ST., MT., P.hD	**Time**	**ID**	**Title**	**Presenter**
	15.30 - 15.45	EPI1802	Investigation on Reflected Wave by Different Geometrical Ramp Shape of Overtopping Break Water for Energy Conversions using experimental and simulation	Muhammad Faris Roslan, Mohammad Fadhli Ahmad and Mohammad Azlan Musa
	15.45 - 16.00	EPI1811	Comparison of Accuracy in Extreme Learning Machine Based on Hidden Node Structure Variation for Lung Cancer Classification	Sofyan Tandungan, Indrabayu Amirullah and Ingrid Nurtanio
	16.00 - 16.15	EPI1848	Local Wisdom that forms of Bajo Ethnic Settlement in Belopa Villlage	Mukti Ali, Annisa Magfirah Ramadhani, Sri Aliah Ekawati

	16.15 - 16.30	EPI1840	Influence of Tropical Environment on Electrical Properties of Electrical Insulation Materials	S Manjang, I Kitta, Gassing, I R Sahali, F Maricar
	16.30 - 16.45	EPI1842	Hydrothermal Alteration Associated with Vein-Type Sulphide Mineralization at Lappadata Prospect, South Sulawesi, Indonesia: A Preliminary Study	Irzal Nur, Sufriadin, Asran Ilyas, Ulva Ria Irfan
	16.45 - 17.00	EPI1850	Chemical Characteristics and Correlation of Heavy Metal Elements in Lumpue Beach, Parepare City	Haerany Sirajuddin, Adi Tonggiroh

Wednesday, 24th October 2018

Room : Lecture Theatre 2

	Time	ID	Title	Authors
Parallel Sesion 1 (13.30 - 15.00) Moderator Zubair M. Alie, ST., MT., P.hD	13.30 - 13.45	EPI1815	Utilising the See-and-Follow Method for Enhancing Robot Learning Ability	Muhammad Anshar, Dicky Halim and Christoforus Yohannes
	13.45 - 14.00	EPI1816	Temperature and Salinity Gradients Analysis for a Solar Pond Prototype	Zaenab Muslimin, Indar Chaerah Gunadin, Muh. Anshar and Agus Siswanto
	14.00 - 14.15	EPI1817	Stability Improvement by Reducing Voltage Fluctuations using SVC in Penetration Wind Power System	Agus Siswanto, Indar Chaerah Gunadin, Sri Mawar Said and Ansar Suyuti
	14.15 - 14.30	EPI1818	Cloud Classification Based in Images Texture Features	Bagus Harda Setiabudi, Ingrid Nurtanio and Zahir Zainuddin
	14.30 - 14.45	EPI1819	Integration of LoRa-Cellular: Design and implementation of data communication in vehicle tracking systems	Amil Ahmad Ilham, Adnan Adnan and Randy Angriawan
	14.45 - 15.00	EPI1852	Rate of Sedimentation In Barane Beach Majene	Apriyansyah, Yusman, Abdi Manaf
	Time	**ID**	**Title**	**Authors**
Parallel Sesion 2 (15.30 - 17.00) Moderator Zubair M. Alie, ST., MT., P.hD	15.30 - 15.45	EPI1812	Environmental Sensor Design Prototype for Genset Backups Power at Ground Station and Data Centers based on Internet of Things Devices	Arif Hidayat, Panji Rachman Ramadhan, Zainuddin Zainuddin and Helmy Zainuddin
	15.45 - 16.00	EPI1813	Impact Optimal DG Placement Against Harmonic Distribution on Reconfiguration Distribution Network on Microgrid System	Muhira Faraby and Ontoseno Penangsang
	16.00 - 16.15	EPI1814	Stability Analysis and Fault Changes on Wind Turbine Effect in Multi Machine Power System	Bayu Adrian Ashad, Agus Siswanto, Indar Chaerah Gunadin and Yusran
	16.15 - 16.30	EPI1804	CFD Analysis of heave and pitch motion of the asymmetrical bridle towline model of a towed ship in waves	Ahmad Fitriadhy, Nurul Aqilah Mansor and Nur Adlina Aldin
	16.30 - 16.45	EPI1841	Insertion of 275 kV Transmission Line for Improving the Voltage Profile and Efficiency of Electrical Power System	I Kitta, S Manjang, I R Sahali, F Maricar
	16.45 - 17.00	EPI1851	Characteristic Sulfat Geochemistry of Barite (BaSO4) Marine Type on Marl Tonasa Formation Barru, South Sulawesi	Adi Tonggiroh, Meutia Farida, Haerany Sirajuddin,Desianto P Battu

Wednesday, 24th October 2018

Room : Lecture Theatre 3

	Time	ID	Title	Authors
Parallel Sesion 1 (13.30 - 15.00) Moderator Dr.Eng. Ilham Alimuddin, ST., M.GIS	13.30 - 13.45	EPI1825	Optimization of Coagulation-Flocculation Process For Tello River Water Treatment Using Poly Aluminum Chloride and Aluminum Sulfate	Setyo Erna Widiyanti
	13.45 - 14.00	EPI1826	Monthly rainfall prediction using statistical downscaling with combination of grid boxes and Adaptive Neuro Fuzzy and Inference System in Lombok	Agus Safril and Amhar Ulfiana
	14.00 - 14.15	EPI1827	Classification Of News On “Radar” Tarakan Online Using K-Nearest Neighbor Method With N-Gram Features	Evi Dianti Bintari, Gunawan and Aida Indriani
	14.15 - 14.30	EPI1828	Subsurface Investigation of Freshwater-Seawater Interface on Gowa-Takalar Coastal Aquifer, INDONESIA	Muhammad Ramli, - Purwanto and Aryanti Virtanti Anas
	14.30 - 14.45	EPI1829	Designing Board Games to Foster Tolerance	Maria Helena Suprapto, Lusia Permata Sari Hartanti and Rosalinda Latumahina
	14.45 - 15.00	EPI1821	Development a shrouded wind turbine with various diffuser type structures	Yiyin Klistafani and Muhammad Iqbal Mukhsen
	Time	**ID**	**Title**	**Authors**
Parallel Sesion 2 (15.30 - 16.45) Amil Ahmad Ilham, ST., M.IT., P.hD	15.30 - 15.45	EPI1822	Effect of Cutting Conditions on Power demand and Surface Roughness through Sustainable Turning of Mild Carbon Steel	Syah Risal, Rusdi Nur, Arthur Halik Razak and Yan Kondo
	15.45 - 16.00	EPI1823	Optimization of pouring temperatures and stirrer speed parameters on a semi-solid slurry of ADC12 Al alloy prepared by mechanical stirring	Syaharuddin Rasyid, Effendy Arif, Hairul Arsyad and Muhammad Syahid
	16.00 - 16.15	EPI1824	Effects of Work on Shock Absorber and Spiral Springs Against Vertical Loads of Vehicles Burdening the Road Structure	Simon Ka'Ka, Syukri Himran, Ilyas Renreng and Onny Sutresman
	16.15 - 16.30	EPI1843	Effect of Water Content on Uniaxial and Schmidt Hammer Pressure Strengths of Limestone and Basalt	Purwanto, Ramlan Dwi Ahmad, Ratna Husain, Busthan, Djamaluddin
	16.30 - 16.45	EPI1853	Modelling Origin Destination Trip Matrix in the Area of Northern Liukang Tupabbiring Islands Using Gravity Model	Andi Sitti Chairunnisa, M. Rizal Firmansyah, Syamsul Asri, Lukman Bochary, Zulkifli
	16.45 - 17.00	EPI1854	A Study for the Application of Steel Frames on a Traditional Wooden Fishing Boat	Lukman Bochary, Mohammad Rizal Firmansyah, Ganding Sitepu, Syamsul Asri

Wednesday, 24th October 2018

Room : Lecture Theatre 4

	Time	ID	Title	Authors
Parallel Sesion 1 (13.30 - 15.00) Moderator Dr. Indar C. Gunadin, ST., MT.	13.30 - 13.45	EPI1834	An Evaluation of Carrying Capacity of Jack-in Piles with Base Enlargement in Soft Clay	Gerard Aponno and Mochamad Sholeh
	13.45 - 14.00	EPI1845	Study on Characteristics of Maneuvering Ferry vessel as Effect Of Sea Waves	Mansyur Hasbullah, Daeng Paroka, Rosmani, and Hanisa
	14.00 - 14.15	EPI1836	Hardware and User Perspective Assessment on Application of Smart Door Access	Muhammad Anshar and Nasri Anas
	14.15 - 14.30	EPI1837	Climatic Significance of Colonial House Forms in Surabaya	I Gusti Ngurah Antaryama and Sri Nastiti Nugraheni Ekasiwi
	14.30 - 14.45	EPI1838	Design of a-based Smart Meters to Monitor Electricity Usage in the Household Sector Using Hybrid Particle Swarm Optimization - Neural Network	Muhammad Yusuf Yunus, Marhatang Marhatang, Andareas Pangkung and Muhammad Ruswandi Djalal
	14.45 - 15.00	EPI1839	Design and analysis of fixture for welding casing components of cross-flow turbine	Muas Muchtar, Syaharuddin Rasyid and Luther Sonda
	Time	**ID**	**Title**	**Authors**
Parallel Sesion 2 (15.30 - 16.45) Sabaruddin Rahman, ST., MT., P.hD	15.30 - 15.45	EPI1830	Flexural Strength Test For Concrete Beam With Mild Steel And Reinforcing Iron	Muhammad Zakaria Umar and Arman Faslih
	15.45 - 16.00	EPI1831	Sacred Spaces: Marketplace Phenomena on Historical Urban Landscape of Palopo	Moh Sutrisno, Sudaryono Sastrosasmito and Ahmad Sarwadi
	16.00 - 16.15	EPI1832	Glare from windows assessment at offices with three types of internal solar shadings	Asri Dinapradipta, Erwin Sudarma, Ima Defiana and Collinthia Erwindi
	16.15 - 16.30	EPI1833	Light Distribution Analysis on Buildings Located on The Coastal	Nurul Jamala, Ramli Rahim, Syavir Latif and Hiromi Ramli
	16.30 - 16.45	EPI1849	Study of Utilizing Banana Peel Waste as an Energy Alternative	Irwan Ridwan Rahim, Asiyanti T. Lando, Kartika Sari, Erika Asriyanti
	16.45 - 17.00	EPI1855	Standardizing Coding System for Ferry Ro Ro Ship Construction Components for Indonesian Shipyards	Mohammad Rizal Firmansyah, Syamsul Asri, Wahyuddin, Farianto Fachruddin

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Dear authors,

We received your paper:

Authors : Muhammad Zubair Muis Alie, Risky Iriani, Juswan Juswan and Muhammad Iqra Ramadhan
Title : Ultimate Strength Analysis of FPSO Hull Girder under Longitudinal Bending
Number : 4

The paper was submitted by Muhammad Zubair Muis Alie <zubair.m@eng.unhas.ac.id>.

Thank you for submitting to EICSE2018.

Best regards,
EasyChair for EICSE2018.

Universitas Hasanuddin

Muhammad Zubair Muis Alie, Ph.D <zubair.m@eng.unhas.ac.id>

EICSE2018 submission

EasyChair <noreply@easychair.org> Sun, Aug 19, 2018 at 9:25 AM
To: Muhammad Zubair Muis Alie <zubair.m@eng.unhas.ac.id>

Dear Muhammad Zubair Muis Alie,

Muhammad Zubair Muis Alie <zubair.m@eng.unhas.ac.id> submitted the following paper to EICSE2018:

Ultimate Strength Analysis of FPSO Hull Girder under Longitudinal Bending
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You are listed as one of the authors of
this paper. To enter the EICSE2018 Web
pages you should visit

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If you forgot your user name or password,
please visit

https://easychair.org/account/forgot.cgi

and specify zubair.m@eng.unhas.ac.id as your email address.

Best regards,
EasyChair Messenger.

Universitas Hasanuddin

Muhammad Zubair Muis Alie, Ph.D <zubair.m@eng.unhas.ac.id>

Review Result of EICSE 2018

EICSE2018 <eicse@unhas.ac.id> Tue, Feb 19, 2019 at 8:17 AM
To: Zubair M <zubair.m@eng.unhas.ac.id>

Dear Mr.Muhammad Zubair M Alie

We have reviewed your paper and there are some contents that need to be corrected. We hope that it can be fixed before February, 24nd 2019.
Herewith we share the file of review result.
Thankyou.

--
Regards,

Organizing Committee of EICSE2018

2 attachments

EPI1821 Review Results.docx
86K

EPI1821_Muhammad Zubair Muis Alie.doc
474K