

TECHNICAL PROGRAM

**The Thirteenth (2003) International
Offshore and Polar Engineering Conference**
Honolulu, Hawaii, USA, May 25-30, 2003

and

**ISOPE Symposium on
High-Performance Materials in
Offshore Industry (HMOI)**

The number at end of the session title indicates the tentative number of the proceedings volume. Only the changes on titles or authors the ISOPE-2003 Technical Program Committee (TPC) received in writing before January 2, 2003 are reflected in this program. Final corrections will be updated in the Conference Proceedings and the Final Program. Proceedings CD-ROM will be available as a set of 4 volumes (2,800 pp. est.) from ISOPE during and after the Conference.

SUNDAY

ISOPE Reception

17:00 Sunday, May 25

Pool Terrace

MONDAY 08:00

07:20

Author Briefing

Makai

Conference Opening 08:00 Mauka/Maloko

1. OCEAN TECHNOLOGY REVIEW (V. 1)

Monday

May 26

08:00

Mauka/Maloko

Chair: Koo, J Y, ExxonMobil Research & Engineering, USA
Co-Chair: Knapp, R H, Univ of Hawaii, USA

Design Challenges for Large Truss Spars

Gebara, J, Technip Offshore Engineering, Inc, USA

New Pipeline Codes — Have They Met the Expectations?

Collberg, L, Moshagen, H, Det Norske Veritas, Norway

Victor 6000: Design, Utilisation and First Improvements

Michel, Jean-Louis, IFREMER, France; Klages, M, Alfred Wegener Inst for Polar and Marine Research, Germany; Barriga, F J A S, Univ of Lisboa, Portugal; Fouquet, Y, Sibuet, M, Sarradin, P-M, Siméoni, P, Drogou, J-F, IFREMER, France

Deep Sea Unmanned Underwater Vehicles in JAMSTEC

Aoki, T, JAMSTEC, Japan

MONDAY 13:20

Plenary Presentation II (V.4)

Monday

May 26

13:20

Ewa Ballroom

High Strength Composites for Infrastructure: Current and Future Directions of Research

Balaguru, P N, National Science Foundation, USA

Introduction by Dutta, Piyush, USA

**ISOPE Symposium on
High-Performance Materials in
Offshore Industry (HMOI)**

Sessions 16, 25 and 34

(Other related topic sessions are on www.isopec.org)

16. HMOI I : Steel Development (V. 4)

Monday May 26 14.00 Ewa Ballroom

Chair: Asahi, H, Nippon Steel, Japan

**Co-Chair: Petersen, C W, ExxonMobil Upstream Research,
USA**

Introductory Remarks

Ayer, R, ExxonMobil Research and Engineering, USA

**Metallurgical Design of Ultra-High Strength Steels for Gas
Pipelines**

Koo, J Y, Luton, M J, Bangaru, N V, Petkovic, R A, ExxonMobil
Research and Engineering; Fairchild, D P, ExxonMobil Upstream
Research, USA, Asahi, H, Hara, T, Sugiyama, N, Terada, Y, Tamehiro,
H, Nippon Steel, Japan.

**Development of Plate and Seam Welding Technology for X120
Linepipe**

Asahi, H, Hara, T, Sugiyama, M, Maruyama, N, Terada, Y, Tamehiro,
H, Koyama, K, Okita, S, Morimoto, H, Tomioka, K, Akasaki, H, Doi,
N, Murata, M, Nippon Steel, Japan; Koo, J Y, Bangaru, N V, Luton, M
J, ExxonMobil Research and Engineering; Fairchild, D P, Macia, M L,
Petersen, C W, ExxonMobil Upstream Research, USA

Girth Welding Development for X100 and X120 Linepipe

Fairchild, D P, Macia, M L, ExxonMobil Upstream Research; Bangaru,
N V, Koo, J Y, ExxonMobil Research and Engineering, USA

Development and Mechanical Properties of X120 Grade Line Pipe

Okaguchi, S, Makino, H, Hamada, M, Ikeda, T, Sumitomo Metal,
Japan; Koo, J Y, Bangaru, N V, Luton, M J, ExxonMobil Research and
Engineering; Fairchild, D P, Macia, M L, Petersen, C W, ExxonMobil
Upstream Research, USA

Pipe Production Technology and Basic Properties of X120 Linepipe

Asahi, H, Tsuru, E, Hara, T, Terada, Y, Okita, S, Morimoto, H, Shinada,
K, Miyazaki, H, Yoshita, T, Doi, N, Murata, M, Ayukawa, N, Akasaki,
H, Nippon Steel, Japan; D P, Macia, M L, Petersen, S W, ExxonMobil
Upstream Research, Koo, JY, Bangaru, NV, Luton, MJ, ExxonMobil
Research and Engineering, USA

Full-Size Testing and Analysis of X120 Linepipe

Papka, S D, Duffy, B W, Oslo, E, Stevens, J H, Zhang, M M,
ExxonMobil Upstream Research, USA

25. HMOI II : Offshore Materials (V. 4)

Tuesday May 27 08:00 Ewa Ballroom

Chair: Hillenbrand, H-G, Europipe GmbH, Germany
Co-Chair: Takeuchi, I, Sumitomo Metals Industries, Japan

Recent Developments in High Strength Linepipe for Sour Environment

Inohara, Y, Ishikawa, N, Endo, S, NKK, Japan

Very Heavy Wall X-70 DSAW Pipes for Tension Leg Application

Liessem, A, Europipe GmbH; Schuetz, W, AG der Dillinger Huttenwerke; Grimpe, F, Mannesmannroehren-Werke AG; Reepmeyer, O, Europipe GmbH, Germany

Acceptance Criteria for Alloy 718 Microstructures in Sour Service

Ayer, R, Mueller, R R, Koo, J Y, ExxonMobil Research and Engineering; Watkins, M, ExxonMobil Development, USA

Precipitation Kinetics Simulated During the Solidification and Continuous Cooling of Ti-Nb Bearing HSLA Steels

Jun, H J, Pohang Univ of Science and Technology; Kang, K B, POSCO; Park, C G, Pohang Univ of Science and Technology, Korea

Characteristics of 1 Pass Welded Joints over 50kJ/mm of Heavy Thickness Shipbuilding Steel

Kim, C M, Lee, J B, Choo, W Y, POSCO, Korea

Tuesday **34. HMOI III : Pipeline Technology (V. 4)**
May 27 10:45 Ewa Ballroom

Chair: Choo, W Y, POSCO, Korea,
Co-Chair: Fairchild, DP, ExxonMobil Upstream Research,
USA

**High-Strength Large Diameter Steel Pipes for Long Distance
High Pressure Gas Pipelines**

Graf, M, Hillenbrand, H-G, Europipe GmbH, Germany

High Strength Steel Pipeline Economics

Corbett, K T, Bowen, R R, Petersen, C W, ExxonMobil Upstream
Research, USA

**Collapse Pressure Prediction and Measurement Methodology
of UOE Pipe**

Tsuru, E, Asahi, H, Nippon Steel, Japan

**HLP Simulation Method for Shear Fracture Propagation in
Natural Gas Transmission Pipelines**

Inoue, T, Nippon Steel; Makino, H, Sumitomo Metals; Endo, S,
NKK; Kubo, T, Kawasaki Steel; Matsumoto, T, Kobe Steel, Japan

**Residual Strength Assessment of Dents Generated by Explosive
Loads in Pipelines**

Useche, J F, Univ Technologica, Cartagena; Gomez, Univ de los
Andes, Columbia

**Analysis of Abnormal Fracture Appearances in Delop-Weight
Tear Tests for High Toughness Pipeline Steels**

Hwang, B C, Pohang Univ of Science and Technology; Yoo, J Y,
POSCO; Lee, S, Pohang Univ of Science and Technology, Korea

**ADDITIONAL SESSIONS ON
COMPOSITES & SMART STRUCTURES**
(Other related topic sessions are on www.isopec.org)

10. COMPOSITES & SMART STRUCTURES I (V. 4)
Monday May 26 10:45 Eha

Chair: Dutta, P K, USACRREL, USA

Co-Chair: Wheat, H G., Univ of Texas at Austin, USA

Recent Advances in Inorganic Polymer Composites

Balaguru, P N, National Science Foundation, USA

Investigation into the Mechanical Behavior of Ceramicrete

Mouring, S E, Miller, P H, Burns, V, US Naval Academy, USA

ER/MR Smart Structures for Shock Wave Reduction

Kim, J H, Choi, S B, Jo, C H, Kim, K S, Inha Univ, Korea

Smart Pressurized Composite Cylinders

Knapp, R H, Structural Solutions/Univ of Hawaii; Shimabukuro, T, Structural Solutions; Robertson, I N, Structural Solutions/Univ of Hawaii, USA

Automation of Damage Index Method to Evaluate Structural Safety

Sikorsky, C, California Department of Transportation, USA

19. COMPOSITES & SMART STRUCTURES II (V. 4)

Monday May 26 14:00 Eha

Chair: Knapp, R H, Univ of Hawaii, USA

Co-Chair: Mouring, S E, US Naval Academy, USA

Thermal Effects on Transition Behavior of FRP Composites for Use in Cold Regions

Karbhari, V, Univ of California at San Diego, USA

An Assessment of Vinyl Sheep Piles for Long Term Applications

Dutta, P K, US Army Cold Regions R&E Laboratory, USA

Influence of Moisture and Low Temperatures on Notched Hopkinson Bar Toughness in a Pultruded Reinforced Composite

Kellogg, K G, Kallmeyer, A R, North Dakota State Univ; Dutta, P K, US Army Cold Regions R&E Laboratory; Patil, R, North Dakota State Univ, USA

Evaluating the Effectiveness of Composite Wrapping

Wheat, H G, Berver, E W, Jirsa, J O, Fowler, D W, Univ of Texas at Austin, USA

FRP Repair of Corrosion Damage in Tidal Waters

Sen, R, Mullins, G, Univ of South Florida, USA

Environmental Exposure Characterization of Fiber Reinforced Polymer Materials Used in Bridge Deck Systems

Lopez-Anido, R A, Univ of Maine; Wood, K S, Maine Dept of Transportation, USA

**ADDITIONAL SESSIONS ON
MATERIALS/WELDING/FATIGUE AND
TUBULAR STRUCTURES**

(Other related topic sessions are on www.isoqe.org)

43. MATERIALS/WELDING/FATIGUE I (V. 4)

Tuesday May 27 14.00 Ewa Ballroom

Chair: Price, J C, SBM-IMODCO, USA

Co-Chair: Suga, Y, Keio Univ, Japan

**Finite Element Simulation of Pear-Shaped Bead Cracking in
Narrow Gap Welding**

Shibahara, M, Kanazawa Inst of Technology; Itoh, S, Liang, W,
Murakawa, H, Osaka Univ, Japan

**The Effect of Residual Stress on the Stability of HY80 Spherical
Shells**

Gruenitz, L, Technical Univ of Hamburg-Harburg, Germany

**An Improved Inherent Strain Analysis for the Prediction of
Plate Deformations Induced by Line Heating Considering
Phase Transformation of Steel**

Jang, C D, Ha, Y S, Ko, D E, Seoul Natioanl Univ, Korea

**Method for Predicting Deformation of Curved Structures
under Assembly by Welding**

Deng, D, Nagano, S, Osaka Univ; Shibahara, M, Kanazawa Inst of
Technology; Murakawa, H, Osaka Univ, Japan

**A Study on the Spot Heating to Correct the Buckling Distortion
of the Deck Structure**

Shin, S B, Kim, H G, Yoon, J G, Hyundai Heavy Industries, Korea

**A Study on the Prediction of Shrinkage during Manufacturing
of a Deckhouse of RIG**

Lee, D J, Shin, S B, Hyundai Heavy Industries, Korea

**Theoretical Study on Forming Twisted Longitudinals by Line
Heating**

Serizawa, H, Miyoshi, R, Osaka Univ; Shibahara, M, Kanazawa
Inst of Technology; Murakawa, H, Osaka Univ, Japan

Lateral Vacuum Consolidation Method

Kang, M C, Lee, S, Univ of Seoul, Korea

**Contaminant Transport Coupled Consolidation Analysis Using
Chemo-Elasto-Viscoplastic Model of Clays**

Abe, N, Osaka Univ, Japan

52. MATERIALS/WELDING/FATIGUE II (V. 4)

Wednesday May 28 08:00 Ewa Ballroom

Chair: Murakawa, H, Osaka Univ, Japan

Co-Chair: Chiew, S-P, Nanyang Technological Univ, Singapore

New Technical Issues in Materials Engineering and Fabrication for Deepwater Hydrocarbon Development

Price, J C, SBM-IMODCO, USA

New Ways of Application of Steels with the Bainite and Acicular Ferrite Structure

Bolshakov, V I, Pridneprovsk State Academy of Civil Engineering and Architecture, Ukraine

Changes of Crystallite Orientation Distribution in TiCN Thin Films Due to Bias Voltages

Gotoh, M, Kanazawa Univ, Japan

Measurement of Elastic Constant Concerning Various Industrial Materials by Neutron Diffraction Method

Saitoh, T, Kanazawa Univ; Minakawa, N, Morii, Y, Japan Atomic Energy Research Inst; Sasaki, T, Hirose, Y, Kanazawa Univ, Japan

The Study on Sintering Process of Ni₃Al Intermetallic Compound

Murotani, T, Kanazawa Univ; Hirose, H, Kinjo Univ; Ikenaga, A, Osaka Prefecture Univ, Japan

Increasing of Steel Strength by the Method of Thermal and Thermomechanical Treatment

Scherbakova, M E O, Bolshakov, V, Pridneprovsk State Civil Eng Academy; Zherbin, M, State Tech Univ of Construction; Shashkina, N, Pridneprovsk State Civil Eng Academy, Ukraine

Microwave Nondestructive Testing of Protective Coatings and Paints for Offshore Applications

Ghodgaonkar, D K, Majid, A M W A, Hamzah, N H, Al-Mattarneh, H M, MARA Univ of Technology, Malaysia

61. MATERIALS/WELDING/FATIGUE III (V. 4)

Wednesday May 28 10:45 Ewa Ballroom

Chair: Tomita, Y, Osaka Univ, Japan

Co-Chair: Gruenitz, L, Technical Univ of Hamburg-Harburg, Germany

Finite Element Method for Hot Cracking on Transverse Cross Section Using Temperature Dependent Interface Element

Shibahara, M, Kanazawa Inst of Technology; Serizawa, H, Murakawa, H, Osaka Univ; Ueda, Y, Kinki Univ, Japan

Fatigue Analysis of Drillstring Threaded Connections

Han, S K, Daewoo Shipbuilding & Marine Engineering, Korea; Knight, M, Brennan, F P, Dover, W D, University College London, UK

Evaluation of Tensile Strength and Fatigue Strength of SUS304 Stainless Steel Friction Welded Joints

Ochi, H, Osaka Inst of Technology; Yamamoto, Y, Setsunan Univ; Ogawa, K, Osaka Prefecture Univ; Tsujino, R, Osaka Inst of Technology; Sawai, T, Osaka Sangyo Univ; Suga, Y, Keio Univ, Japan

A New Approach to Fatigue Strength Evaluation of Ship Hull (Second Report)

Wang, Y H, Tomita, Y, Hashimoto, K, Osawa, N, Terai, K, Osaka Univ, Japan

Three-dimensional Numerical Investigation on Thickness-Through and Surface Fatigue Crack Closure

Miyashita, T, Tomita, Y, Hashimoto, K, Osawa, N, Osaka Univ, Japan

WEDNESDAY 19:00

Annual Conference Banquet

19:00

Regency Ballroom

87. TUBULAR STRUCTURES (V. 4)

Thursday May 29 10:45 Ewa Ballroom

Chair: Choo, Y S, National Univ of Singapore, Singapore

Co-Chair: WAM Wan Mahmood, Mara Univ of Technology, Malaysia

The Fatigue Strength of Tubular Joints with Modified Profiling Technology

Romeijn, A, Wardenier, J, TU-Delft ; Glijnis, P C, HGG Profiling Equipment BV ; Dijkstra, O D, TNO Building and Construction Research, The Netherlands

The Fatigue Behaviour of Bird Beak Joints

Romeijn, A, Wardenier, J, TU-Delft; Glijnis, P C, HGG Profiling Equipment BV, The Netherlands

Brittle Fracture in Beam-to-Column Welded Joints : Assessment Based on FAD Approach

Dale, K W, Kurobane, Y, Azuma, K, Sojo Univ ; Iwashita, T, Ariake National College of Technology, Japan

On the Fatigue Behaviour of Welded Cast Steel – Steel Connections

Herion, S, Univ of Karlsruhe ; Bucak, O, Munich Univ of Applied Sciences ; Koch, E, Deutsche Bahn AG, Germany

Additional Full-Scale Testing of Beam-to-Column Connections with Improvements in Welded Joints

Shinde, H, Sojo Univ; Obukuro, Y, Kumamoto Univ; Kurobane, Y, Sojo Univ; Makino, Y, Kumamoto Univ; Azuma, K, Dale, K, Sojo Univ, Japan

Static Strength of Doubler Plate Reinforced X-Joints under Out-of-Plane Bending

Liang, J X, Choo, Y S, Liew, J Y R, National Univ of Singapore, Singapore

The Strength of Multiplanar Overlap KK-Joints (O_v -100%) of Rectangular Hollow Sections under Axial Loading

Liu, D K, Wardenier, J, Delft Univ of Technology, The Netherlands

Finite Element Analysis of Concrete Plugs in Tubular Steel Piles

Nezamian, A, Al-Mahaidi, R, Grundy, P, Monash Univ, Australia

THURSDAY 14:15

CONFERENCE TOUR: Polynesian Cultural Center

Buses depart at 14:15 from Hyatt Regency's side street.