

July 1–6

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## Lisbon, Portugal

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**The Seventeenth (2007) International  
Offshore (Ocean) and Polar Engineering Conference**

**5th ISOPE HPM Symposium:  
Nanomaterials for Structural Application**

**1st ISOPE  
Strain-Based Design  
Symposium**

**7th ISOPE Ocean Mining (& Gas Hydrates)  
Symposium**

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**ISOPE-2007**

Corinthia Lisboa Hotel  
Lisbon Portugal; July 1–6

## Technical Program

Refereed papers from **48** countries in **120** sessions and  
**7** plenary sessions

**General Information, Reservations, Publication, Author  
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## TECHNICAL PROGRAM

### The Seventeenth (2007) International Offshore and Polar Engineering Conference

Lisbon, Portugal, July 1–6, 2007

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-2007 Technical Program Committee (TPC) received in writing before January 22, 2007 are reflected in this program. Paper titles in blue color are additions to the printed version of the technical program. Final corrections will be updated in the Conference Proceedings and the Final Program. Proceedings CD-ROM (ISBN 1-880653-68-0; ISBN 978-1-880653-68-5) will be available as a set of 4 volumes (3,600 pp. est.) from ISOPE during and after the Conference.

#### SUNDAY, July 1

#### Conference Reception

17:00

To Be Announced

#### MONDAY 09:00

#### 1. OCEAN & ARCTIC INDUSTRY REVIEW (V. 1)

Monday July 2 09:00 Floriana

**Chair:** Langen, I, University of Stavanger, Norway

**Co-Chair:** Isaacson, M, University of British Columbia, Canada

#### Opening Address

Matsui, T, ISOPE President, USA.

#### Engineering Challenges Driven by the Navy and Navy after

Next [Oral presentation]

Gruber, P L, Office of Naval Research, USA

#### Subsea Development in the Ormen Lange Offshore Project

Eklund, T, Hydro Oil and Energy, Norway

#### Polar Rules: Are Harmonized Standards Good for Shipping?

Santos-Pedro, V, Transport Canada, Canada

#### East Siberian Pipeline: State and Development

Koff, GL, Russian Ministry of Emergency Situations/Rosstroy;

Bekker, AT, Far-Eastern State Technical Univ, Russia

#### Eurocode 8 – Design for Earthquake Resistance of Foundations

Séco e Pinto, P S, Univ of Coimbra /LNEC, Portugal

**The 1st (2007) ISOPE  
Strain-Based Design Symposium**

at ISOPE-2007 Conference, Corinthia Lisboa Hotel  
Lisbon, Portugal, July 1–6, 2007

**47. SBD I: Materials I (V. 4)**

Tuesday                      July 3                      14:00                      Aquamarin

**Chair:** Lillig, D, ExxonMobil Development Co., USA

**Co-Chair:** Liessem, A, Europipe, Germany

**Introductory Remarks**

Yong-Yi Wang, EMC-Square, USA

Eiji Tsuru, Nippon Steel, Japan

Dan Lillig, ExxonMobil Development Co., USA

**X80 Linepipe Steels for Critical Applications**

Siciliano, F, CBMM-Sao-Paulo, Brazil; Fazackerley, W J, EWI  
Microalloying International, USA

**Development of a High Strength Steel Line Pipe for Strain-based Design  
Application**

Shinohara, Y, Hara, T, Tsuru, E, Asahi, H, Terada, Y, Doi, N, Ayukawa, N,  
Murata, M, Nippon Steel, Japan

**High Strength Linepipes with Enhanced Deformability**

Mannucci, G, Guagnelli, M, Anelli, E, Centro Sviluppo Materiali, Italy

**X100 Induction Heated Bends from SAW Pipe**

Takahashi, N, Sumitomo Metals Industries, Japan

**Thermal Aging Behavior during Coating of X80 High Strength Steel for  
Line Pipe**

Shigesato, G, Shinohara, Y, Hara, T, Sugiyama, M, Asahi, H, Nippon Steel,  
Japan

**High Strength Spiral Linepipe for Strain-based Pipeline Designs**

Collins, L E, Bai, D, Hamad, F, Chen, X, IPSCO, Canada

**57. SBD II: Materials II (V. 4)**

Tuesday                      July 3                      16:20                      Aquamarin

**Chair:** Tsuru, E, Nippon Steel, Japan

**Co-Chair:** Fairchild, D, ExxonMobil Upstream Research, USA

**Welding Engineering for High Strain Pipelines**

Newbury, B D, ExxonMobil Development, USA

**Material Design for Line Pipe Steel to Minimize HAZ Softening and to  
Obtain Good HAZ Toughness**

Hamada, M, Hirata, H, Shitamoto, H, Okaguchi, S, Yamamoto, A,  
Takahashi, N, Miura, M, Takeuchi, I, Sumitomo Metal Industries, Japan

**Microstructure Modeling of HAZ Softening and Microhardness Tests**

Chen, Y, Liu, M, Wang, Y Y, Engineering Mechanics Corp of Columbus,  
USA

**Analysis of the Retardation in Fatigue Crack Propagation Considering  
the Redistribution of Residual Stress Induced by Overload**

Jo, Y C, Seoul National Univ; Bang, J K, STX Shipbuilding; Song, H C,  
Mokpo National Univ; Jang, C D, Seoul National Univ, Korea

**Study on the Relationship between Yield Ratio, Uniform Elongation and  
Hardening Exponent of High Grade Pipeline Steel**

Ji, L K, Gong, S T, Huo, C Y, Zhao, X W, Chen, H Y, Tubular Goods  
Research Center, CNPC; Li, X, Xi'an Shiyong Univ, China

**High Strain Capacity X60 Linepipe Steels with Superior Strain Aging Resistance**

Jin, H W, ExxonMobil Research & Engineering, USA

**66. SBD III: Testing and Evaluation (V. 4)**

Wednesday July 4 08:00 Aquamarin

**Chair:** Mannucci, G, CSM, Italy

**Co-Chair:** Lee, K, Lincoln Electric, USA

**Modelling and Measurements for the Assessment of a Full Scale Pipe Bend Test**

Smith, S D, Pisarski, H G, TWI; Vlattas, C, Saipem UK, UK

**Recent Advances in Curved Wide Plate Testing and Implications for Strain-based Design**

Fairchild, D, ExxonMobil Upstream Research, USA

**Local Strength Testing for Girth Welds in X-100 Pipes**

Mohr, W, Edison Welding Inst, USA

**Large-scale Testing Methodology to Measure the Influence of Pressure on Tensile Strain Capacity of a Pipeline**

Gioielli, P, ExxonMobil Upstream Research, USA

**Evaluation of High Strength Submerged Arc Heat Affected Zone Properties Utilizing Advanced Waveform Control**

Lee, K, Lincoln Electric, USA

**The Effect of Weld Defect on Properties of HSAW Linepipe**

Xiong, Q R, Huo, C Y, Feng, Y R, Tubular Goods Research Center, CNPC, China

**Development of New UST Inspection for UOE Pipe Mill**

Nagase, M, Hirose, Y, Horikiri, T, Ookubo, H, Yamano, M, Sumitomo Metal Industries, Japan

**76. SBD IV: Design and Project (V. 4)**

Wednesday July 4 10:30 Aquamarin

**Chair:** Collberg, L, DNV, Norway

**Co-Chair:** Østby, E, SINTEF, Norway

**Integrating Geohazard Demand and Structural Capacity Modelling within a Probabilistic Design Framework for Offshore Arctic Pipelines**

Kenny, S, Barrett, J, Phillips, R, C-CORE; Popescu, R, Memorial Univ of Newfoundland, Canada

**Strain-based Design Methodology for Seismic and Arctic Regions**

Barbas, S T, ExxonMobil Upstream Research, USA

**Tensile Strain Limits of X80 High-strain Pipelines under Seismic Loadings**

Igi, S, JFE Steel; Suzuki, N, JFE R&D, Japan

**Soil-pipe Interaction along Active Faults**

Cocchetti, G, di Prisco, C, Galli, A, Nova, R, Italy

**The Feasibility and Prospect of Strain-based Design to Pipelines in China**

Chen, H Y, Ji, L K, Tubular Goods Research Center, CNPC, China

**Key Issues Should be Considered for Application of Strain-based Designed Pipeline in China**

Li, X, Xi'an Jiaotong Univ/CNPC/Xi'an Shiyu Univ; Li, H L, Xi'an Shiyu Univ, China

**Strain-based Design of X80 Gas Pipeline in Seismic Areas in China**

Gao, H, CNPC-CPPE, China

**86. SBD V: Mechanics (V. 4)**

Wednesday July 4 14:00 Aquamarin

**Chair:** Liu, M, EMC-Square, USA  
**Co-Chair:** Tyson, W, CANMET, Canada

**Crack Driving Force in Pipelines Subjected to Large Strain & Biaxial Stress Conditions – Part 1: FEA Approach**  
Mohr, W, EWI, USA

**Crack Driving Force in Pipelines Subjected to Large Strain & Biaxial Stress Conditions – Part 2: Influence of Material Variables**  
Gordon, J R, EWIMicroalloying, USA

**Crack Driving Force in Pipelines Subjected to Large Strain & Biaxial Stress Conditions – Part 3: Influence of Loading Variables**  
Gordon, J R, EWIMicroalloying, USA

**Effect of Biaxial Stress on ECA of Pipelines under Strain-based Design**  
Tyson, W R, Shen, G, Roy, G, CANMET Natural Resources Canada, Canada

**Apparent Fracture Toughness from Constraint Considerations and Direct Testing**  
Wang, Y Y, Liu, M, Engineering Mechanics Corp of Columbus, USA;  
Horsley, D, TransCanada Pipelines, Canada

**Predictive FEA Modeling of Full-scale Pressurized Tests**  
Minnaar, K, ExxonMobil Upstream Research, USA

**Pressure Effects on Strain Concentration and Constraint for Strain-based Design**  
Mohr, W, Edison Welding Inst, USA

**Fracture Control – Offshore Pipelines JIP: Use of ABAQUS/Explicit to Simulate Ductile Tearing in Pipes with Defects Loaded Beyond Yielding**  
Sandvik, A, Statoil ASA; Østby, E, SINTEF Materials and Chemistry;  
Thaulow, C, NTNU, Norway

**Comparison of Crack Driving Force Estimation Schemes for Weld Defects in Reeled Pipelines**  
Tkaczyk, T, Technip UK; O'Dowd, N, Univ of Limerick; Howard, B P, Technip UK, UK

**Advanced Modeling of Plasticity of Linepipe Steels with Anisotropic Texture and Complex Loading History**  
Liu, M, Wang, Y Y, Engineering Mechanics Corp of Columbus, USA

**Effects of Strength Matching, HAZ Softening, Material Property of Line Pipe on Strain Capacity of X80 Line Pipe Girth Welded Joint Subjected to Uniaxial Tensile Loading**  
Motohashi, H, Hagiwara, N, Tokyo Gas, Japan

**96. SBD VI: Assessment Procedures I (V. 4)**

Thursday July 5 08:00 Aquamarin

**Chair:** Wang, Y Y, EMC-Square, USA  
**Co-Chair:** Barbas, S, ExxonMobil Upstream Research, USA

**Development of Girth Weld Flaw Assessment Procedures for Pipelines Subjected to Axial Plastic Straining**  
Pisarski, H G, Cheaitani, M J, TWI, UK

**A New Probabilistic Approach to Fracture Control of Offshore Pipelines: 1) Background**  
Sigurdsson, G, Collberg, L, Wästberg, S, DNV, Norway

**A New Probabilistic Approach to Fracture Control of Offshore Pipelines: 2) Applications and Comparisons**  
Collberg, L, Wästberg, S, DNV; Levold, E, Statoil; Sigurdsson, G, DNV, Norway

**Overview of Existing and Emerging Assessment Procedures for the Determination of Pipeline Tensile Strain Limits**  
Wang, Y Y, Liu, M, Engineering Mechanics Corp of Columbus, USA

**Stress versus Strain Based Design: A Few Differences**  
Liessem, A, Europipe; Knauf, G, Zimmermann, S, Salzgitter Mannesmann Forschung, Germany

**Current Research and Outstanding Issues in the Strain Based Design of Pipelines**  
Wang, Y Y, Liu, M, Engineering Mechanics Corp of Columbus, USA

**Evaluation Precept for Strain Capacity of High Strength UOE Line Pipe Used in Strain-based Design Application**  
Tsuru, E, Shinohara, Y, Asahi, H, Nippon Steel, Japan

**Application of WES2808 to Brittle Fracture Assessment for Gas Pipeline Girth Welds**  
Kubo, T, Igi, S, JFE Steel; Suzuki, N, JFE R&D; Toyoda, M, Ohata, M, Minami, F, Osaka Univ, Japan

**Strain-based Design of High Strength Pipelines**  
Wang, Y Y, Liu, M, Rudland, D, Engineering Mechanics Corp of Columbus, USA; Horsley, D, TransCanada Pipelines, Canada

**106. SBD VII: Assessments Procedures II (V. 4)**

Thursday July 5 10:30 Aquamarin

**Chair:** Hugo, E, Tenaris, Argentina  
**Co-Chair:** Minami, F, Osaka University, Japan

**Fracture Assessment Procedure for Structural Components under Cyclic and Dynamic Loading**  
Minami, F, Ohata, M, Watanabe, D, Osaka Univ, Japan

**Fracture Control – Offshore Pipelines JIP: LINKpipe**  
Berg, E, et al, NTNU, Norway

**Fracture Control – Offshore Pipelines JIP: Proposal for Strain-based Fracture Assessment Procedure**  
Østby, E, et al, SINTEF Materials and Chemistry, Norway

**Fracture Control – Offshore Pipelines JIP: Results from Large Scale Testing of the Effect of Biaxial Loading on the Strain Capacity of Pipes with Defects**  
Østby, E, et al, SINTEF Materials and Chemistry, Norway

**Mechanical and Fracture Mechanics Evaluation of Heat Affected Zone of Girth Welded Joints**  
Ernst, H, Castelluccio, G, Bravo, R, Tenaris, Argentina

**Fracture Mechanics Assessment of Displacement Controlled Installation Process of Line Pipes**

Ernst, H, Bravo, R, Buschiazo, A, Tenaris, Argentina

**Probabilistic Structural Reliability Assessment of Reeled Pipes – Multiple Cycles Cases**

Ernst, H, Bravo, R, Passarella, D, Tenaris, Argentina

**116. SBD VIII: Compressive Strain Limit and Buckling (V. 4)**

Thursday July 5 14:00 Aquamarin

**Chair:** Suzuki, N, JFE, Japan

**Co-Chair:** Bruschi, R, Snamprogetti, Italy

**Compressive Strain Limits and Seismic Integrity of X80 High-strain Pipelines**

Suzuki, N, JFE R&D; Igi, S, JFE Steel, Japan

**Methodology for Measurement of Mechanical Properties to Predict Collapse Pressure of UOE Pipe**

Tsuru, E, Asahi, H, Doi, N, Murata, M, Nippon Steel, Japan

**UOE Pipes for Ultra Deep Water Application: Analytical and FE Collapse Strength Prediction vs. Full Scale Tests of Thermally Treated Line Pipe**

Liessem, A, Groß-Weege, J, Knauf, G, Zimmermann, S, Salzgitter Mannesmann Forschung, Germany

**Buckling Behavior of API-X80 Linepipe**

Kang, K B, Yoo, J Y, Ahn, S S, POSCO; Cho, W Y, Yoon, T Y, RIST, Korea

**Evaluation of Strain Limit of Compressive Buckling by FE Analysis**

Shitamoto, H, Sumitomo Metals Industries, Japan

**UOE Pipes for Ultra Deep Water Application: Collapse Strength Capacity vs. Material Characteristics State-of-the Art**

Bruschi, R, Torselleti, E, Vitali, L. Snamprogetti, Italy

**UOE Pipes for Ultra Deep Water Application: Strength Capacity under Combined Loading Conditions for Thermally Treated Line Pipe Characteristics**

Bruschi, R, Torselleti, E, Vitali, L. Snamprogetti, Italy

## HOTEL RESERVATION FORM (must use this form)

Corinthia Lisbon Hotel (5-star), July 1-6, 2006

Corinthia Lisbon Hotel (5 stars) is the official venue for the Conference. If making your reservation at ISOPE room rate without this form, you must indicate that reservations are for the *ISOPE Conference*. In order to have your room guaranteed, this reservation form with **one (1)** night's deposit must be received **via either fax or mail** only and **no later than April 1, 2007** by (and also confirmation via fax or email by):

**Group Reservation (ISOPE-2007): [maria.costa@corinthia.pt](mailto:maria.costa@corinthia.pt)**

**Corinthia Lisbon Hotel: Fax: +351-217-236-364**

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Arrival: \_\_\_\_\_ Time \_\_\_\_\_; Depart.: July \_\_\_\_, Time \_\_\_\_\_

Room Choice\*: Single/Double No of Rooms (*and Circle One*)

Classic Single €105 \_\_\_ Sgl / Dbl / \_\_\_ Twin\*\*

Classic Double €125 \_\_\_ Sgl / Dbl / \_\_\_ Twin\*\*

Supplem Exec Extra €50 \_\_\_ Sgl / Dbl / \_\_\_ Twin\*\*

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\* Rates include VAT of 5% (subject to change) and breakfast.

\*\* Name of the person to share: \_\_\_\_\_

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