



# 8th Pipeline Technology ptc Conference

18-20 March 2013 Hannover Congress Centrum, Hannover, Germany

# **Conference Program**







**Platinum Sponsors** 



**Golden Sponsors** 



Silver Sponsors





event an







#### **INTRODUCTION**

From 18-20 March 2013 the Pipeline Technology Conference (ptc) will take place for the 8th time.

Since 2006, the main focus of the Pipeline Technology Conference (ptc) is on latest technologies and new developments in the international pipeline industry. Besides an overview on international key projects, new construction methods, and an insight into new operation & maintenance, rehabilitation, in-line inspection and integrity management field studies and technologies, ptc 2013 will provide special focus sessions on "Materials - Steel Line Pipe" and "Stations and Components".

The practical nature of ptc was always based on the cooperation with our technical and scientific supporters and on a top-class international advisory committee.

Please take a closer look at the following pages and join Europe's leading conference for new pipeline technologies.



**Conference & Exhibition** 

Technology

8th Pipeline

Dr. Klaus Ritter Pipeline Technology Conference Chairman President of EITEP

#### ADVISORY COMMITTEE

#### **CHAIRMEN**



Dr. Klaus Ritter, President, EITEP - Euro Institute for Information and Technology Transfer

Waleed Al-Shuaib, Manager

Support Services Group (S&EK), Kuwait Oil Company (KOC)

Uwe Breig, Member of the Execu-

tive Board / BU Utility Tunnelling ,

Ricardo Dias de Souza, Oil Engi-

neer - Senior Advisor, Petrobras /

Herrenknecht

#### **MEMBERS**



Maik Bäumer, Head of Strategic Business Segment Infrastructure, TÜV NORD Systems







Transpetro Dr. Hans-Georg Hillenbrand, Director Sales, Europipe





Reinhold Krumnack, Div. Head. DVGW - German Technical and Scientific Association for Gas & Water

Dirk Jedziny, Vice President - Head

of Cluster Ruhr North, Infracor

Uwe Ringel, Managing Director,

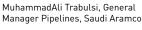
**ONTRAS-VNG** Gastransport





Ulrich Schneider, Executive Vice President Business Unit Services EMAA, NDT Systems & Services







Market Segment Pipelines, Siemens



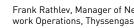
Dr. Manfred Veenker, Shareholder, Dr.-Ing. Veenker Ing.-ges. / Mem-





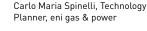








Director Engineering, Nord Stream



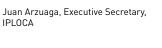


Tobias Walk, Director Instrumentation, Automation & Telecom/IT-Systems, ILF Consulting Engineers

**CONFERENCE MANAGEMENT** 



Dennis Fandrich, Director Conferences. EITEP - Euro Institute for Information and Technology Transfer



Manfred Bast, Managing Director, GASCADE Gastransport



Arthur Braga, CEO, CTDUT - Pipeline Technology Center



Hans-Joachim de la Camp, Head of Dept. Pipelines, Authorized Inspector, TÜV SÜD Industrie Service



Andreas Haskamp, Pipeline Joint Venture Management, BP Europa SE



Mark David Iden, Director,









Charterford House

Frank Rathley, Manager of Network Operations, Thyssengas













cal Consultant, Landolt AG

Heinz Watzka, Managing Director

Dr. Michael Bellter. Senior Techni-

Technical Services, Open Grid

Europe

IPLOCA

Jens Focke, Head of Sales & Mar-

keting, GEOMAGIC





Prof. Dr. Joachim Müller-Kirchenbauer, Head of Dept. Gas Supply, TU Clausthal

Hermann Rosen, President, ROSEN



www.pipeline-conference.com

Maximilian Hofmann, Managing Director, MAX STREICHER

### **TIME SCHEDULE**

	Sunday, 17 March	Monday, 18 March		Tuesday, 19 March		Wednesday, 20 March		Thursday, 21 March	Friday, 22 March
9		Registration		S 1: Steel S 2: S 3:		S 7: S 8: Product Corrosion S: 9:			
10 11		Plenary Session 1		S 1: Steel Stations Line Pipes Stations ponents S 3: Inline In- spection		Pipelines Protec- Special tion / Require- ments tation	Exhibition		
12 13		Lunch Break within the exhibition		Lunch Break within the exhibition	Exhibition	Lunch Break within the exhibition		Seminars (registration required) 1) In-Line Inspection of	Seminars (continue) (registration required) 1) In-Line Inspection of
14			Exhibition	S 4: S 5: Oper- S 6: Planning ational Integrity		Post-Conference Workshops (free for ptc delegates)		Transmission Pipelines (Part I)	Transmission Pipelines (Part II)
15 16		Plenary Session 2 & 3	ň	and Con- Improve- Manage- struction ments ment		<ol> <li>Leak Detection System Operation - Measurement Based, Mass Balance Technology (Siemens)</li> <li>Pipeline Leak Detection (Krohne)</li> <li>(Custody Transfer) Metering Systems (Krohne)</li> </ol>			
17 18		Get-together within the exhibition						8	6
19				Dinner-Invitation "German Oil Museum"					
	Advisory Committee Meeting								

## **CONFERENCE PROGRAM - MONDAY, 18 MARCH 2013**

(all abstracts available online)

	OPENING AND PLENARY SESSION (Niedersachsenhalle B)
10:00-10:30	<ul> <li>Welcome by Dr. Klaus Ritter, President, Euro Institute for Information and Technology Transfer, Germany</li> <li>Keynote Speech by Heinz Watzka, Managing Director Technical Services, Open Grid Europe, Germany</li> </ul>
	PLENARY SESSION I (Niedersachsenhalle B)
	Session Chair: Dr. Klaus Ritter, President, Euro Institute for Information and Technology Transfer, Germany
10:30-12:00	<ul> <li>"Natural Gas Pipeline Safety Policy &amp; Practices: Influences of Current Developments on Pipeline Projects in Germany", Dr. Jochen Stratmann, Project Manager Pipeline Projects, Open Grid Europe, Germany</li> <li>"Enhance Pipeline Safety", Stephen Klejst, Director, Office of Railroad, Pipeline and Hazardous Materials Investigations, National Transportation Safety Board (NTSB), USA</li> <li>"The Development Tendency of Pipeline Standards Based on Quantitative and Qualitative Analysis", Dr. Bing Liu, Chief Engineer of Division of Standardization, PetroChina Pipeline R&amp;D Center, China</li> <li>"Overall simulation of German natural gas transmission systems", Steven Hotopp, Research associate, Clausthal University of Technology, Institute of Petroleum Engineering, Germany</li> </ul>
12:00-13:30	Lunch Break within the Exhibition
	PLENARY SESSION II (Niedersachsenhalle B)
	Session Chair: Heinz Watzka, Managing Director Technical Services, Open Grid Europe, Germany
13:30-15:00	<ul> <li>"Illegal tap repair applications", Adem Dincay, Maintenance Planning &amp; Corrosion Control Manager, Botas International Ltd., Turkey</li> <li>"Third party damage prevention: the human factor and the Integrity of Pipeline Installations, an urbanization proposal", Mauricio Terada Vaz, Pipeline Right-of-Way Maintenance Coordinator of São Paulo Region, PETROBRAS TRANSPORTE SA - TRANSPETRO, Brazil</li> <li>"Integrated approach to risk and safety – MTO: Including human, organizational and inter-organizational factors", Dr. Babette Fahlbruch, Coordinator in the field of Human Factors / Human-Technology-Organization, TÜV NORD Systems GmbH &amp; Co. KG, Germany</li> <li>"Pipeline Leak Detection Technologies and Emergency Shutdown Protocols", Prof. Dr. Gerhard Geiger, Westphalian University Gelsenkirchen, Germany</li> </ul>
15:00-15:30	Coffee Break within the Exhibition
	PLENARY SESSION III (Niedersachsenhalle B) Session Chair: Dr. Michael Beller, Senior Technical Consultant, Landolt AG, Switzerland
15:30-17:00	<ul> <li>"Integrity Management - North American Perspective", Trent van Egmond, Senior Integrity Engineer, TransCanada, Canada</li> <li>"Pipelines Integrity Management Plans: an Initiative toward Collaboratively Managing Pipelines Integrity", Yaser S. Al-Qahtani, Integrity Management Engineer, Saudi Aramco, Saudi Arabia</li> <li>"Integrated PIMS supporting an offshore pipeline system", Peter Baars, Asset Manager Pipeline Systems, GDF SUEZ E&amp;P Nederland B.V., The Netherlands</li> <li>"View of a Pipe Manufacturer to the Developments for Linepipe Material", Dr. Hans-Georg Hillenbrand, Director Sales, EUROPIPE GmbH, Germany</li> </ul>
from 17:00	Get-together Party within the Exhibition

# **CONFERENCE PROGRAM - TUESDAY, 19 MARCH 2013**

(all abstracts available online)

ТІМЕ	SESSION 1 (Blauer Saal) STEEL LINE PIPES Session Chair: Dr. Gerhard Knauf, Head of Div. Mech. Eng., Salzgitter Mannesmann For- schung, Germany	SESSION 2 (Bonatz Saal) STATIONS AND COMPONENTS Session Chair: Tobias Walk, Director for Instrumentation, Automation and Telecom/ IT-Systems, ILF Consulting Engineers GmbH, Germany	SESSION 3 (Roter Saal) INLINE INSPECTION Session Chair: to be announced		
09:00-10:15	X80 Pipelines in Arctic Environment: Prediction of the Long-Distance Ductile Fracture Propaga- tion/Arrest Dr. Alexey Gervasyev, Russian Research In- stitute of the Tube and Pipe Industries, JSC, Russia	Metering selection approach <mark>Andreas Hausmann</mark> , ILF Consulting Engineers GmbH, Germany	UT-ILI and Fitness-for-Purpose Analysis for Se- verely Internally Corroded Crude Oil Pipeline Shabbir Safri, Kuwait Oil Co., Kuwait		
	High Strength Large Diameter UOE Line Pipes Optimised for Application in Remote Areas and Low-Temperature Service Dr. Charles Stallybrass, Salzgitter Mannesmann Forschung GmbH, Germany	Compressor Station Considerations Matt Lubomirsky, Solar Turbines Inc., USA	Reliable sizing of complex metal loss through combined ILI data sets for internal & external anomalies in gaseous & liquid Johannes Palmer, ROSEN Technology & Research Center GmbH, Germany		
		Integrated maintenance practices for rotating equipments Alberto Rostagno, GE Oil and Gas, Italy	On the Application of Statistical Methods in Inline Inspection – An Overview Dr. Gerhard Kopp, NDT Systems & Services GmbH & Co. KG, Germany		
10:15-10:45	Coffee Break within the Exhibition				
10:45-12:00	HAZ Physical Simulation of API5L X80 Pipeline Steel Prof. Ivani de S. Bott, Pontifical Catholic Univer- sity of Rio de Janeiro/PUC-Rio, Brazil	Four Ultra Large Surge Relief Systems for an Asian 40" Crude Oil Pipeline Project – A Case Study Trilochan Gupta, Daniel Measurement & Control Business Unit of M/s Emerson Process Manage- ment Asia Pacific Pte Ltd, Singapore	Apply Non Destructive Testing for Assessment Hydrogen Cracking in Joining Procedure of Split Tee to Pipeline in Hot Tapping. Meysam Rasooly, Ebrahim Mohseni Homagerani, National Iranian Gas Company, Iran		
	Axial strain capacity of line pipe subjected to combined loading conditions - An experimental approach in full-scale dimension: LiSA Dr. Steffen Zimmermann, Salzgitter Mannes- mann Forschung GmbH, Germany	Custody transfer flow metering systems for the oil and gas Industry Ralph Kwaaitaal, KROHNE Oil & Gas, The Neth- erlands	EMAT for detection of axially aligned cracks at girth welds <mark>Stephan Tappert</mark> , GE Oil & Gas - PII Pipetronix GmbH, Germany		
		Total Drag Reduction Solutions from Opportu- nity to Operation Dr. Yung N. Lee, Phillips Specialty Products, Inc, USA	Mechanical Damage Assessment Using Multiple Data Sets in Inline Inspection Abel Lopes, T.D. Williamson, United Kingdom		
12:00-13:30	00-13:30 Lunch Break within the Exhibition				

# **CONFERENCE PROGRAM - TUESDAY, 19 MARCH 2013**

(all abstracts available online)

TIME	SESSION 4 (Blauer Saal) PLANNING AND CONSTRUCTION	SESSION 5 (Bonatz Saal) OPERATIONAL IMPROVEMENTS	SESSION 6 (Roter Saal) INTEGRITY MANAGEMENT		
	Session Chair: Dr. Prodromos Psarropoulos, Structural & Geotechnical Engineer, National Technical University of Athens, Greece	Session Chair: Jochen Frings, Senior Project Engineer, ILF Consulting Engineers GmbH, Germany	Session Chair: Dr. Gundula Stadie-Frohbös, Head of Department "Systems Engineering & Risk Management", Germanischer Lloyd SE, Germany		
13:30-14:45	Challenges In The Construction And Installation Of Pipelines Gathering System - Refinery Abreu E Lima, Brazil Flavio Alexandre Silva, PETROBRAS S/A, Brazil	Example of the Effect of Sudden Overpressure in Piping System Ahmed R. AlMutairi, Saudi ARAMCO, Saudi Arabia	Application of risk based methodology to onshore & offshore pipelines Dr. Gundula Stadie-Frohbös, Germanischer Lloyd SE, Germany		
	Pipeline Seismic Design and Potential Mitiga- tion Measures Dr. Prodromos Psarropoulos, National Technical University of Athens, Greece	A comprehensive approach to integrity of DN 400 high pressure pipeline <mark>Ales Brynych</mark> , CEPS a. s. , Czech Republic	Real time pipeline protection and assurance Henry Stephenson, OptaSense, United Kingdom		
	Pipe Express® - An innovative method for environmentally friendly and economical pipeline installation Diana Pfeff, Herrenknecht AG, Germany	MAC MEC Pipeline project: advantages and challenges of the concept Dr. Andreas Helget , Siemens, Germany	Prioritizing threats in gas pipeline systems - An example related to transporting renewable and unconventional gases Martin Hommes, DNV KEMA Energy & Sustainabil- ity, Netherlands		
14:45-15:15	Coffee Break within the Exhibition				
15:15-16:30	Efficient application of the Horizontal Direction- al Drilling technology in pipeline construction Dr. Hans-Joachim Bayer, TRACTO-TECHNIK GmbH & Co. KG, Germany	Crude Oil Network Modeling, Simulation & Optimization – Novel approach and Operational Benefits Mohamed Rizwan, Kuwait Oil Company, Kuwait	Pipeline Integrity Analysis Using a 3D Laser Scan- ner Method Pierre-Hugues Allard, CREAFORM, Canada		
	Applying Offshore Pipe-in-Pipe Technologies on Onshore Projects Pierre Ollier, ITP InTerPipe SA, France	Integrated Cyber and Plant Security Supports Operational Safety Michael Barth, ILF Consulting Engineers GmbH, Germany	Reasons to implement an enterprise Work Man- agement solution for proving auditing acceptability Jens Focke, GEOMAGIC GmbH, Germany		
	CoiFlatLine - A game changing approach to ultradeepwater pipeline Philippe Nobileau, MARINOVATION, France	Smart solutions for pipeline safety after a natu- ral disaster Dr. Gillian Kendrick, Ubisense, United Kingdom	FBG Optical Sensing for Pipeline Structural Health Monitoring Dr. Daniele Costantini, Micron Optics, Inc., USA		
17:15	Bus transfer from "Congress Hotel am Stadtpark" for Dinner Invitation "German Oil Museum"				

### **CONFERENCE PROGRAM - WEDNESDAY, 20 MARCH 2013**

(all abstracts available online)

TIME	SESSION 7 (Blauer Saal) PRODUCT PIPELINES - SPECIAL REQUIREMENTS Session Chair: Dr. Margreet Spoelstra, RIVM (National Institute for Public Health and the Environment), Researcher, Netherlands	SESSION 8 (Bonatz Saal) CORROSION PROTECTION / REHABILITA- TION Session Chair: Michael Schad, Director Busi- ness Development, DENSO GmbH, Germany	<b>SESSION 9</b> (Roter Saal) <b>MONITORING</b> Session Chair: Jens Focke, Head of Sales & Marketing, GEOMAGIC GmbH, Germany	
09:00-10:15	Risks of Underground Pipelines Transporting Chemicals Dr. Margreet Spoelstra, RIVM (National Institute for Public Health and the Environment), Neth- erlands	Analysis of Microstructure and Mechanical Properties Patching Result on Flowline Pipe Ari Antono, Kondur Petroleum S.A, Indonesia	realSens Remote Sensing of Liquid Hydrocar- bon Leaks from Pipelines Adrian Banica, Synodon Inc., Canada	
	Field Experience with Interior Pipe Coatings from High Performance Polyurethane Elastom- ers Hendrik Hörnschemeyer, Rosen Swiss AG, Switzerland	Composite Repair Performance at Elevated Temperatures Jim Souza, Pipe Wrap LLC, USA	Fiber Optic Based Pipeline Monitoring Alexander Rauscher, PiMON GmbH, Germany	
	Internal Corrosion Mitigation Strategies for Naphtha Transportation through Pipelines Cherian P. Varghese, Indian Oil Corporation Limited, India	Maximizing Transportation Capacity of an Aged Crude Oil Pipeline El Sayed Abdel Maaboud Mohamed Bayoumy, Egyptian General Petroleum Corporation (EGPC), Egypt	Remote Sensing based automated Change de- tection of Oil and Gas Pipeline corridors <mark>Santanu Sur, Vijay Kumar</mark> , Tata Consultancy Services, India	
10:15-10:45	Coffee Break within the Exhibition			
10:45-12:00	FRP-reinforced Liner Pipes for the Safe and Reliable handling of corrosive media in chemi- cal industry and metallurgy Dr. Mirko Lotz, Quadrant EPP AG, Switzerland	New building blocks for rigid polyurethane pipe coatings Andreas aus der Wieschen, Bayer MaterialS- cience AG, Germany	Continous Real-Time Pipeline Deformation, 3D Positioning and Ground Movement Monitoring Along The Sakhalin-Khabarovsk-Vladivos Adrian Garrow, Omnisens S.A, Switzerland	
	Requirements for safe and reliable CO <sub>2</sub> trans- portation pipeline (SARCO <sub>2</sub> -A) – Project Update Dr. Stefan Jäger, Salzgitter Mannesmann Forsc- hung GmbH, Germany	SCC Direct Assessment on 16"gas line and considering the coating defect as primary factor to determine SCC Shamsedin Shamsaee, TWI Persia, Iran	Performance of the ThreatScan <sup>™</sup> system in dif- ferent operational and environmental conditions Thierry Romanet, PII Pipeline Solutions, United Kingdom / Paul Roovers, Fluxys, Belgium	
	Status of National and International Standardi- zation in CO <sub>2</sub> Transportation Dr. Achim Hilgenstock, E.ON New Build & Tech- nology, Germany	Polypropylene coating system with improved low temperature performance Norbert Jansen, Borealis Polymere GmbH, Germany	Custody Transfer Measurement on the World Longest Heated and Insulated Pipeline – A Case Study Neelesh Purohit, Cairn India Limited, India	
12:00-13:30	Closing Lunch Break within the Exhibtion			

13:30-17:00 Post-conference workshops (visit www.pipeline-conference.com/workshops for details)

#### GET TOGETHER PARTY MONDAY, 18 MARCH 2013, 17:00

#### BACKGROUND

On the evening of Conference day 1 the "Pipeline Technology Conference Get-together" takes place directly within the exhibition and catering area. All conference delegates are not only granted free entry but also a complimentary supper and drinks while being entertained by live-music.

#### PARTICIPANTS

 All registered participants, exhibitors, sponsors of Pipeline Technology Conference 2013

#### TIME SCHEDULE

• 17:00 Opening of the buffet

#### SPONSORED BY







#### BACKGROUND

After the 2012 Dinner Invitation at Hannover Zoo was well received by the ptc participants, EITEP has planned an evening event for the next ptc, as well. On March 19th all participants will be invited to the "Deutsches Erdölmuseum" in Wietze, near Hannover. There will be a dinner within the museum with plenty of possibilities to experience the

which will from then on be part of the museum.



history of the industrial oil and gas production in Germany. The dinner sponsor Rosen Group will officially present a new exhibition piece

#### PARTICIPANTS

- All registered participants, exhibitors, sponsors of Pipeline Technology Conference 2013
- Invited guests from energy and oil/gas network corporations.
- Invited guests from regional and municipal government.

#### TIME SCHEDULE

- 17:15 Participants meet in front of the "Congress Hotel am Stadtpark" where busses are available for transporation to the German Oil Museum (Deutsches Erdölmuseum • Schwarzer Weg 7-9 • 29323 Wietze)
- 18:00 Welcome by the organizer, the director of museum and the main dinner sponsor and presentation of the new exhibit from ROSEN
- 18:30 Participants get the chance to visit the exhibition and the unique historic outside area
- 19:00 Official opening of the buffet
- 22:00 Bus transfer back to Hannover

#### SPONSORED BY

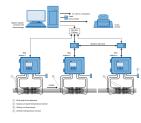


#### POST-CONFERENCE WORKSHOPS WEDNESDAY, 20 MARCH 2012

Registered delegates of the 8th Pipeline Technology Conference are free to visit any of the following post-conference workshops.

# LEAK DETECTION SYSTEM OPERATION - MEASUREMENT BASED, MASS BALANCE TECHNOLOGY

13:30-17:00, Room 12/14



Siemens leak detection systems use mass balance technology. A patented thermal model computes and corrects for liquid expansion due to pipeline temperature or pressure changes. "Liquident" sonic signature identifies liquid density and viscosity for standard barrel or mass flow rate computation, and Reynolds number

based flow profile compensation. Liquident display screens visibly identify arrival of interfaces at site stations eliminating the need for inconvenient and expensive densitometer readings.

If you wish to participate in this free workshop, please register yourself at the Siemens exhibition booth during the Pipeline Technology Conference or in advance through Mr. Rodrigo Barreda Maza, rodrigo.barreda@ siemens.com, Phone +49 9131 1883104.

#### Organized by Siemens

Please see <u>www.pipeline-conference.com/workshops</u> for details on all workshops.

#### (CUSTODY TRANSFER) METERING SYSTEMS

13:30-16:30, Room 8/10



This workshop is aimed at engineers responsible for metering in pipelines. The intention is to show how new technologies have evolved to overcome problems previously encountered in metering. Planning, operation and maintenance for gas, liquid and LNG applications will be discussed between the referees and the

attendees.

If you wish to participate in this free workshop, please register yourself at the Krohne Messtechnik exhibition booth during the Pipeline Technology Conference or register in advance at http://de.krohne.com/de/unternehmen/krohne-deutschland/krohne-academy-2013/pipeline-leak-detection/

Organized by Krohne Messtechnik

#### PIPELINE LEAK DETECTION

13:30-17:00, Room 7/9



This workshop is aimed at all operators as well as manufacturers of Oil, Gas, Chemical and refined product pipelines. The intention is not only to share the basic fundamentals of leak detection, but also for the information to be exchanged between the attendees. Real life pipeline examples from the attendees will be

used to design possible leak detection systems directly in the workshop.

If you wish to participate in this free workshop, please register yourself at the Krohne Messtechnik exhibition booth during the Pipeline Technology Conference or register in advance at http://de.krohne.com/de/unternehmen/krohne-deutschland/krohne-academy-2013/pipeline-leak-detection/

Organized by Krohne Messtechnik

#### SEMINAR "IN-LINE INSPECTION OF TRANSMISSION PIPELINES" THURSDAY-FRIDAY, 21-22 MARCH 2013

09:00-17:00, Room 12/14



Seminar In-Line Inspection of Transmission Pipelines 31-23 March 2013 MC - Hannow Company Dartum, Hannow Carmany The course will provide an in-depth introduction into the subject and importance of pipeline inspection and integrity management. Delegates will learn about the need for pipeline inspection and the use of inspection for the analysis of the pipelines integrity and fitness-forpurpose.

The course will introduce the flaws and anomalies observed in pipelines. Suitable external and internal inspection technologies will

be introduced including the strength and weaknesses of the non-destructive testing principles applied.

The material cover details on a pipeline inspection operation, including pipeline preparation, cleaning, gauging.

Final Reports, Reporting Formats are discussed. The course also includes a short introduction into integrity assessment.

#### TARGET GROUP

Managers responsible for pipeline integrity, Pipeline Engineers, Technicians or other interested personnel from operators. Engineering Consultants active in the field of NDT and Integrity Assessment. Personnel from the authorities or certification bodies involved with pipeline inspection and assessment and licensing.

#### **COURSE CONTENT**

1 Introduction

1.1 Pipelines: Why is Pipeline Integrity Management important?1.2 Introducing Integrity Assessment and Fitness-For-Purpose1.3 Pipeline Integrity Management

1.4 Safety Aspects and International Approaches

2 Defects in Pipelines

- 2.1 Pipeline materials
- 2.2 Types of pipelines
- 2.3 Coating Flaws
- 2.4 Corrosion and Metal Loss
- 2.5 Cracks and Crack-Like Defects 2.6 Leaks

3 Pipeline Inspection

- 3.1 Hydro- and Stress testing
- 3.2 In-Line Inspection
- 3.3 External Inspection Methods

4 Non-Destructive Testing Technologies 4.1 Magnetic Flux Leakage Technology

4.2 Ultrasonic Technology

5 Pipeline Inspection Tools

- 5.1 Free swimming In-Line inspection tools
- 5.2 Tethered and cable operated tools
- 5.3 Automated external inspection tools
- 6 Pipeline Inspection Procedures
- 6.1 Planning an inspection
- 6.2 Preparing the Pipeline for an Inspection
- 6.3 Pipeline Cleaning
- 6.4 Performing the Inspection

7 Reporting

- 7.1 Data Evaluation
- 7.2 Final Report
- 7.3 Introducing POF
- 7.4 Integrity Assessment: MAOP
- 7.5 Run Comparison
- 7.6 Data Management and archiving

#### LECTURERS

#### Dr. Michael Beller





#### PRICING

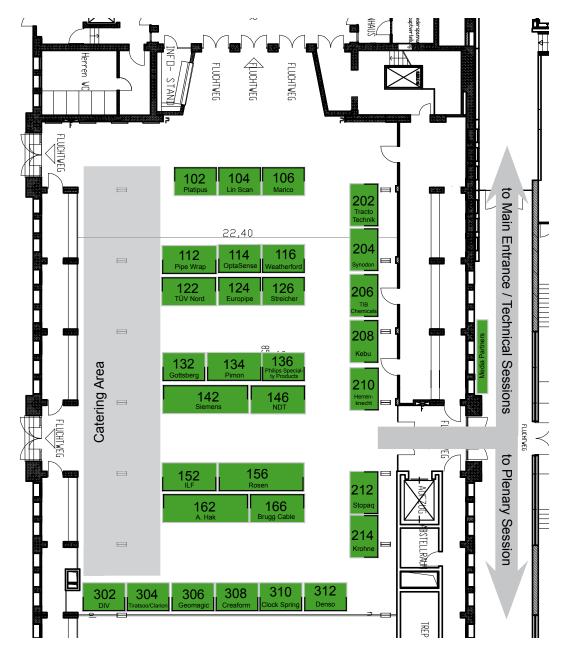
The registration fee is 1,400 Euro per persons (1,200 Euro for already registered delegates of Pipeline Technology Conference 2013). All prices + 19% VAT.

Included services: Seminar documentation, catering during coffee breaks and lunch breaks, dinner invitation on first day.

Registration deadline: 11 March 2013

More information and registration form: www.pipeline-conference.com/seminars

#### **EXHIBITION LAYOUT (NIEDERSACHSENHALLE A)**



A.Hak Industrial Services B.V.	The Netherlands	162
Brugg Kabel AG	Switzerland	166
Clock Spring Company, L.P.	USA	310
Creaform Deutschland GmbH	Germany	308
DENSO GmbH	Germany	312
DIV Deutscher Industrieverlag / Vulkan-Verlag	Germany	302
EUROPIPE GmbH	Germany	124
GEOMAGIC GmbH	Germany	306
GOTTSBERG Leak Detection GmbH & Co. KG	Germany	132
Herrenknecht AG	Germany	210
ILF Consulting Engineers GmbH	Germany	152
Kebulin - Gesellschaft Kettler GmbH & Co. KG	Germany	208
Krohne Messtechnik GmbH	Germany	214
Lin Scan Germany GmbH	Germany	104
MARICO ARMATUREN GmbH	Germany	106
MAX STREICHER GmbH & Co. KG aA	Germany	126
NDT Systems & Services GmbH & Co KG	Germany	146
OptaSense	United Kingdom	114
Phillips Specialty Products Inc.	USA	136
PiMON GmbH	Germany	134
Pipe Wrap, LLC	USA	112
Platipus Anchors Limited	United Kingdom	102
ROSEN Group	Switzerland	156
Siemens AG	Germany	215
Stopaq B.V.	The Netherlands	212
Synodon Inc.	Canada	204
TIB Chemicals AG	Germany	206
Tiratsoo Technical / Clarion	USA	304
Tracto Technik Gmbh & Co.KG	Germany	202
TÜV NORD Systems GmbH & Co. KG	Germany	122
Weatherford Pipeline & Specialty Services	Germany	116

8th Pipeline Technology Conference Conference & Exhibition

#### **PLATINUM SPONSORS**



ROSEN is a leading privately owned company serving the oil and gas industry with inspection, integrity, and rehabilitation products and services. For over 30 years, ROSEN has provided the industry with advanced inspection and integrity solutions to ensure safe and economical operation of a wide range of assets and facilities. The ROSEN Group operates in more than 100 countries and employs

over 2,000 people. Founded by Hermann Rosen in Germany in 1981, ROSEN has been headquartered in Switzerland since 2000. In September 2011, ROSEN celebrated its 30th anniversary.

Today, ROSEN not only serves the oil and gas industry but also provides a wide range of sophisticated and innovative products and system solutions to engineering industries such as aerospace, marine, transportation and security. ROSEN also has the expertise and equipment to inspect utility assets such as telecommunication towers, wind turbines, transmission towers, rail wheels and water distribution systems.

Products & Services: • Pipeline cleaning and inspection services • Pipeline cleaning tools, accessories and spare parts • Pipeline rehabilitation services • Cleaning of tanks • Plant & terminal inspection (tanks and other structures in refineries, processing plants, tank farms, etc.) • Inspection of utility assets such as telecommunication towers, wind turbines, transmission towers, rail wheels and sea-going vessels • Inspection of fresh water systems • Standard and customized solutions for a wide range of engineering industries (security devices, intelligent plastic solutions, pipe coating) • Integrity management services and software solutions.

www.roseninspection.net

**SIEMENS** Siemens brings to the industry the biggest portfolio of integrated solu-

tions for Pipelines. Our solutions are available with a wide range of power

ratings, matching stringent needs of oil and gas transmission and distribution. The portfolio includes Compression and Pumping solutions, Integrated SCADA, Automation, Safety Systems, Instrumentation, Electricals, Energy

management, Management Information Systems, MES, Integrated Telecommunications, Security Systems, E-houses, & partial FEED services that ensure a lower total cost of investment, operations at peak efficiency levels, excellent environmental performance, high level of asset management, increased availability, operations de-risking management and key performance indicators management thus translating into unrivalled lifetime value. Brief description of the main products and services: • Gas turbines • Compression solutions • Pumping solutions • SCADA, automation and safetyintegrated systems • Pipeline-monitoring systems: e.g. batch-tracking, leak-detection, operator-training systems, intelligent alarm-management • Management information system to determine the key performance indicators of the pipeline • Supply chain solutions, such as asset management, planning and scheduling, Performance Management, etc. • Integrated telecommunication systems • Instrumentation • Drive systems (E-Drives /Gas Turbines) • Pipeline security systems, including solutions to protect the pipe • Integrated power solutions • FEED Support • Services: engineering, PM, site services, etc. • Revamps • Life Cycle Management • Water technology www.siemens.com

#### **GOLDEN SPONSORS**



NDT Systems & Services with its business unit NDT Services offers global pipeline services: pipeline preparation and cleaning, geometry inspection, mapping, metal loss and crack detection, integrity assessment and fitness-for-pur-NDT Systems & Services

pose analysis. A network of worldwide operating units, professional project management teams, highly trained crews and data analysts

ensure high quality services.

www.ndt-global.com

ILF Consulting Engineers is a 100% independent, fully private owned engineering and consulting company with more than 40 years of experience and ranks among the world's top CONSULTING engineering companies in its core areas of expertise - oil & ENGINEERS gas, energy & climate protection, water & environment and

transport & structures. ILF provides comprehensive, full-scope services for major industrial and infrastructure projects and combines world class consulting expertise and a broad international background with project-specific know-how and an in-depth understanding of local requirements due to a stable, long-established presence in its markets.

#### www.ilf.com



Operating in more than 70 countries and employing more than 10,000 people worldwide, TÜV NORD Group is one of the largest technical service providers in Germany. TÜV NORD experts provide you with

support throughout the entire service life of the pipeline, from the routing and planning to the installation and operation through to the modernisation, decommissioning, and dismantling. We ensure a constant high level of quality through regular inspections and check that the system design complies with regulations at the end. Every day and everywhere in the world, examples are to be found: examples of TÜV NORD Group staff taking responsibility for people and the environment.

www.tuev-nord.de

#### **SILVER SPONSORS**

EUROPIPE is the world's leading supplier of SAWL/SAWH steel pipe for gas- and oil pipelines, onshore / offshore, (0.D. 20" to 60", lengths up to 18,3 m / 24,4 m). The annual output is in excess of one million tonnes or around 3000 kilometers on sites in Germany, France and USA (BSPC / BSPM).

EUROPIPE is the major pipe supplier for ultra-large projects e.g. • Nord Stream Pipeline I + II, Baltic Sea: EUROPIPE quantity 1.800 km or 1,6 M tons (Project quantity 2x 1.200 km) • Ichthys, Australia: EUROPIPE quantity 540 km or 410,000 tons (Project quantity 880 km)

Range of competence of the EUROPIPE Group: • High-strength pipe: X 80 to X 100 • HIC-resistant pipe: all grades up to X 70 • Collapse-resistant pipe: optimisation of geometry and grade

#### www.europipe.com



GOTTSBERG Leak Detection GmbH&Co.KG is a family owned developer and manufacturer of one of the technical leading products in the market of ultrasonic leak detection pigs for pipelines. Its aim

is to provide affordable state of technology products that are easy to handle and absolutely reliable in their performance for the sales market as well as for service offers. With its specialists GOTTSBERG Leak Detection can look back at nearly 40 years of experience in the field of pipeline integrity. www.leak-detection.de



Herrenknecht is a technology and market leader in the area of mechanized tunnelling systems. As the only company worldwide, Herrenknecht delivers cuttingedge tunnel boring machines for all ground conditions and in all diameters – ranging from 0.10 to 19 meters.

The Herrenknecht product range includes tailor-made machines for transport tunnels (Traffic Tunnelling) and supply and disposal tunnels (Utility Tunnelling). The company also produces state-of-the-art deep drilling rigs that drill down to depths of 8,000 meters (Herrenknecht Vertical) as well as a wide range of HDD Equipment.

www.herrenknecht.de

#### **EXHIBITORS**



A. Hak Group is one of the world's leading service providers in all aspects of pipeline lifecycle management - from the detailed design of a new pipeline to the final stages in which A. Hak can modify, inspect,

test and recertify to increase the lifecycle of a pipeline.A. Hak Industrial Services B.V. provides a range of specialized industrial, pipeline, inspection and tank- services to the (petro) chemical, refining and pipeline industries throughout the entire plant lifecycle. More than 2.000 employees are currently working in the industry worldwide, as we have been doing for 50 years now. since 1963.

www.a-hak-is.com



Brugg Cables is a leading developer, manufacturer and supplier of engineered fiber optic sensing cable system solutions. These sensing cables detect strain, tem-

perature, acoustics / vibration, pressure, humidity and intrusion using the Brillouin, Raman, Rayleigh or FBG measurement methods. Brugg offers a wide range of fiber optic sensing cables and accessories for distributed sensing, connecting cables and specialty fiber optic cables.

www.bruggcables.com



Clock Spring is the leading permanent pipeline repair solution manufacturing a 50 year DOT approved re-

pair system of high strength corrosion resistant composite sleeves that are fast, economical, safe and easy to install requiring no cutting or welding. We also provide the Contour system a custom engineered advanced composite repair for complex geometries and tight clearances.

www.clockspring.com



Creaform specializes in portable optical 3D measurement technologies and 3D engineering services and offers optical measurement solutions for

non-destructive testing. Compared to traditional methods, the systems can significantly reduce measurement time and streamline the whole process of applications such as pipeline external corrosion analysis and pipeline mechanical damage assessment.

www.creaform3d.com



CTDUT - Pipeline Technology Center is a not-forties for research and testing of equipment to the pipeline industry as well as in the qualification and

training of specialized personnel. Our test dedicated loops with PIG launchers and receivers are located in Rio de Janeiro, Brazil.

www.ctdut.org.br



Founded in 1922, we dedicate ourselves since 90 years to the field protection of joints and pipelines.

www.denso.de Today's core business: Production of 3-ply corrosion prevention tapes, heat shrinkable sleeves,

2-components polyurethane compounds for pipelines and infrastructures. bitumen profiles and compounds for infrastructures.

#### www.denso.de



**GEOMAGIC** GEOMAGIC is an international IT service provider for utilities. The company combines state-of-the-art IT expertise with

experience of energy management and is your professional partner for the development and implementation of solutions in operative and strategic asset management. GEOMAGIC contributes its detailed knowledge of the industry to international projects for pipeline integrity management (PIMS). www.geomagic.de



The Kebulin Gesellschaft has manufactured field coating materials for earth and water installed pipeline construction for over 60 years. This wealth of experience and our striving for

constant improvement applies both to the continuous optimisation of existing products and also the new development of innovative products (Kebulen shrink technology). www.kebu.de

DIV Deutscher Industrieverlag, of Munich, Vulkan Verlag Germany, and Vulkan-Verlag, based in Essen, Germany, are two affiliated media cor-

porations. Following the motto Knowledge for the future they supply expert technical information for engineers, technicians, scientists and manage-

ment in German and English. Most Books and journals are also available in eBook/ePaper form.

www.di-verlag.de



KROHNE is a full-service provider for process measuring technology for the measurement of flow, mass flow, level, pressure and temperature as well as analytical tasks.

Founded in 1921 and headquartered in Duisburg, Germany, the company employs over 2,600 people all over the world and is present on all continents. www.krohne.com

**Lin SCAN** Since 2001, LIN SCAN has been providing Pipeline Inspection and Integrity Support Services for Oil and Gas Industry globally. LIN SCAN possesses a huge fleet of tools designed for cleaning and inspection of pipelines. All equipment is designed and fabricated in-house and covers the full range of pipeline diameters. LIN SCAN also supplies cleaning pigs, pig traps (launchers & receivers) and provide specialized pipeline cleaning serv-

ices. LIN SCAN has its corporate office established in United Arab Emirates and its subsidiaries in various countries including Russia, India, Qatar, Sudan, Algeria, Iraq and now in Saarland, Germany.

www.linscaninspection.com



• Import + Export of Industrial Valves • Globe, gate, butterfly, non-return, knife gate, ball valves, strainers in cast iron, cast, forged and stainless steel for water, waste water, oil and gas • International trading since 1953 • Large stock of DIN valves and own workshop

www.marico-armaturen.de



Many years of experience, technical know-how, flexibility and quality characterise the STREICHER Group. The company, with 3,000 employees worldwide, undertakes large-scale projects in different sectors, such as Pipeline & Plant Construction, Me-

chanical Engineering, Civil & Structural Engineering and Raw & Construc-

#### tion Material. www.streicher.de

# OptaSense a QinetiQ company

 OptaSense® are world leaders in Distributed Acoustic Sensing providing transformational cost-saving technology to help protect and secure the world's critical as-

sets and pipelines whilst enabling leak prevention in addition to leak detection. Our thousands of virtual microphones alert, classify and locate events instantly enabling real-time decision making. www.optasense.com

**Liquic Power** Phillips Specialty Products Inc. is the global leader of drag reduction. PSPI specializes in maximizing the flow potential of pipelines.

while increasing operational flexibility, throughput capacity and substantially increasing profit potentials. PSPI offers a range of flow improvers for both crude oils and refined products.

www.LiquidPower.com

PIPELINE MONITORING GMbH PiMON GmbH has developed a fiber optic based monitoring and localization technology for infrastructures like pipelines and rail tracks. With our technology it is even possible to prevent leaks in pipelines and damages caused by intrusion from a third party (sabotage, illegal tapping, construction work, farming). www.pi-mon.com



Platipus design, manufacture and supply Percussion Driven Earth Anchoring solutions for the buoyancy control of small and large pipelines. Installation is fast and easy using porta-

ble equipment and can be completed before or after the pipeline is laid. The system requires no Cathodic protection with minimal impact on the environment.

www.platipus-anchors.com



Pipe Wrap, LLC. offers proven products and systems engineered to reduce down time and costs of piping replacement. Our array of piping protection and repair products are designed

to address specific problems with engineered solutions in almost any piping application and on any piping material.

www.piperepair.net



**STOPAQ**<sup>®</sup> Stopaq BV manufactures visco-elastic technology for anticorrosion and sealing in the onshore pipeline, offshore industry, and is suitable to be

applied in extreme climates. The systems do not cathodically disbond. The material is impermeable once applied and exhibits self-healing features even at very low temperatures. Therefore, truly Seal for Life.

www.stopaq.com



8th Pipeline Technology Conference

**Conference & Exhibition** 

Synodon has developed a patented airborne remote gas sensing technology called realSens which, when flown in a helicopter at 300m altitude, generates 2D maps of gas plumes that may exist in its 64m wide view. The company is offering a turn-key survey

service targeted primarily to the natural gas production/transmission pipeline sector.

www.synodon.com



PROTEGOL® Coating Systems, PUR/EP-based and providing 0% VOC, offer reliable protection against corrosion in most diverse ambiences. The proven track record of over 50 years extends from field joint coating and reha-

bilitation of entire pipelines in the field up to online application in the factory, including all special-geometry buried structures.

www.tib-chemicals.com



Clarion is a leading provider of technical information and education for pipeline professionals. Delivery is through reference books, technical journals, courses, and specialized conferences. www.clarion.org



TRACTO-TECHNIK develops and manufactures pipe ramming machines for trenchless pipe installations. These machines enable the economic installation of open steel pipes as casing or product pipes up to 4000 mm diameter over lengths up to 80 m in soils of the classes 1 - 5 (partly even class 6 - easily soluble rock) without jacking abutments.

www.tracto-technik.com



Weatherford globally offers turnkey pipeline integrity assessment and rehabilitation services including chemical and mechanical cleaning, nitrogen, hydrostatic testing, in-line-inspection

by MultiCal 360TM, MFL/TFI, UTWM/CD to detect corrosion, metal-loss, manufacturing anomalies and SCC, engineering critical assessments with our new i-ViewTM software and lastly rehabilitation and repair. www.weatherford.com/pss

## SPECIAL SUPPORTER



Open Grid Europe Open Grid Europe is Germany's lead-ing gas transmission company. With its ultra-modern, efficient system of

approx. 12,000 km of pipeline and comprehensive technical services. Open Grid Europe offers and arranges innovative, forward-looking transportation solutions for natural gas and biomethane. www.open-grid-europe.com

#### 8TH PIPELINE TECHNOLOGY CONFERENCE 2013

18-20 March 2013, Hannover Congress Centrum, Hannover, Germany Participant Registration Form

#### Please return form to: Fax +49 511 90992 69, Email: ptc@eitep.de

or use our online registration www.pipeline-conference.com Questions? Contact Ms. Claudia Quatz on +49 511 90992 20

PARTICIPANT	
Company	
Title / First Name / Last Name	
Position	
Address	
Postcode / City	
Country	
Phone / Fax	
Email	

Registration Fee	until 30 Nov. 2012	until 31 Jan. 2013	after 31 Jan. 2013		
🗆 Regular	520 Euro + VAT	550 Euro + VAT	580 Euro + VAT		
□ Students	60 Euro + VAT				
🗌 yes 🗌 no	I will take part at the dinner invitation at "German Oil Museum" on 19 March (in- cluded in the registration fee)				

Group packages available on request
-------------------------------------

<u>Participation fee includes</u>: entrance to conference and exhibition, printed proceedings, lunch, beverages, snacks, tickets for get-together and dinner invitation

Conference language: English

<u>Entry conditions</u>: Payment has to be made before the conference. Registrations can be cancelled (in writing only) at a service charge of 30 Euro up to 6 weeks before the event. In case of later cancellation or failure to attend the entire attendance fee will be payable. The registered delegate may nominate a substitute at no additional cost. The organisers reserve the right to amend the program of events if necessary.

By bank transfer after receipt of invoice

Signature

X

Date

For credit card payment, please use our online registration form at www.pipeline-conference.com/registration

#### **INFORMATION**

#### Conference Hotel

#### ORGANIZER

EITEP - Euro Insitiute for Information and Technology Transfer • Am Listholze 82 • 30177 Hannover • Germany • www.eitep.de Dennis Fandrich • Phone: +49 511 -90992-22 • fandrich@eitep.de

#### VENUE

The Pipeline Technology Conference takes place at

HCC - Hannover Congress Centrum • Theodor-Heuss-Platz 1-3 • 30175 Hannover • Germany • www.hcc.de

The HCC provides sufficient parking space and is well-connected to highway A 37, Hannover Airport and Hannover Central Station. Name of the closest tram stop is "Hannover Congress Centrum" (Line 11).

For further information: www.pipeline-conference.com/venue

#### **CONFERENCE LANGUAGE**

English

#### ACCOMMODATION

The official ptc hotel is:

Congress Hotel am Stadtpark • Clausewitzstr. 6 • 30175 Hannover • Germany • www.congress-hotel-hannover.de Phone: +49 511 - 2805-0 • info@congress-hotel-hannover.de

A limited contingent of rooms is reserved until 24.02.2013. Please contact the hotel directly and make your own reservation as soon as possible with reference to "ptc 2013".



#### Room rates per night

	Single	Double	Double
		(1 person)	(2 persons)
Economy	89 Euro		
Classic	99 Euro	112 Euro	130 Euro
Suite	on request	on request	on request

Including breakfast and free wi-fi.

#### **PICTURE CREDITS**

Cover: Europipe, NDT Systems & Services, ONTRAS Inside: German Oil Museum, HCC

# Some ptc participants of the last years



3M Deutschland GmbH, 3S Consult München GmbH, 7-Technologies A/S, A. Hak International B.V., Adria-Wien Pipeline GmbH, ADVANTICA Ltd, Afrika-Verein, AIR LIQUIDE, Air Liquide Deutschland GmbH, Al Fateh University, Al Sbiaa Training & Qualification Company, Alcoa Extrusions Europe, ALLSAT GmbH, Allseas Engineering bv, Ambela Business & Technology Centre LTD., AP Energy Business Publications Pte Ltd , ApplusRTD, Arcelor Mittal, Aroma High Tech Ltd., ARS Anlagen und Rohrsysteme Betriebsführung & Service GmbH, Ascope Gas Centre, Asel-Tech, ATMOS International Ltd, AWS Schäfer Technologie GmbH, Babendererde Engineers GmbH, Baker Hughes, Barthauser Software GmbH, BASF SE, BAYER Material Science, Bayernoil Raffeneriegesellschaft mbH, Bergrohr GmbH, BJ Pipeline Inspection Services, Borealis Polymere GmbH, Borealis Polyolefine GmbH, Boskalis Offshore , Botas International Ltd., Botas Petroleum Pipeline Corporation, BP Azerbaijan, BP Europa, BP Refining Petrochemicals, BP Gelsenkirchen GmbH, Braunstahl Pipe Tec GmbH, Bredero Shaw Ltd., Breivoll Inspection Technologies, BREWABA Wasserbauges. Bremen mbH, Brochier Rohrleitungsbau München GmbH, Brugg Rohrsysteme GmbH, BS Coatings SAS, Buijvoets Trading International, Bunde-Etzel-Pipelinegeseltschaft mbH & Co. KG, Cameroon Oil Transportation Company S.A., Carela R. Späne GmbH, Caterpillar SARL, Centre for Global Energy Studies, Chian Petroleum Pipeline Engineering Corporation, Cisco Systems Inc., Citadel Technologies, Clock Spring Company LP, CMEC Skval Valves, Comtech GmbH, CONCAWE, ConocoPhillips Specialty Products Inc. (CSPI), Corinth Pipeworks S.A., Corrosion Service Company Europe Ltd, Corus Tubes, CRC-Evans B.V., CTDUT - Pipeline Technology Center, Cybernetix SA, Dalcai B.V., DBI GUT GmbH, de la Motte & partner GmbH, Definiens AG, Deltares, Denso

GmbH, Deutsche BP, Deutsche Transalpine Oelleitung GmbH, Development and Technology, DGMK, DIW econ GmbH, DONG OIL PIPE A/S, Down Town Construction Co. w.l.l., Dr. Berrou Ing. Consult, Dr. Spang GmbH, Dr.-Ing. Veenker Ingenieurgesellschaft mbH, Dresser Infrastructure Solutions, Drylce Solutions GmbH, DSTA - Defence Science & Technology Agency, DVGW - German Technical and Scientific Association for Gas and Water, E.H. Wachs, E.ON new Build & Technology GmbH, e.on Ruhrgas AG, EADS Secure Networks GmbH, geplast Werner Strumann GmbH, Eisenbau Krämer, Eisenwerke Fried. Wilhelm Düker, Enbridge Pipelines Inc., EnBW Energie Baden-Württemberg AG, Energie und Geologie, Energy Solutions International Ltd., Engineers India Limited, eni gas & power Division, eni SpA - Divisione Gas & Power, EPRG, esa-meridian (pty) ltd., Ethylen-Pipeline Sid GmbH&Co.KG, Euro Gulf Gate Group, Euroflansch GmbH, European Commission, European Network of Transmission System Operators for Gas (ENTSOG), EUROPIPE GmbH, Exen Conseil, ExxonMobil Central Europe Holding, ExxonMobil Production Deutschland GmbH, FARO Europe GmbH & Co. KG, Federal Institute for Geosciences and Natural Resources (BGRI, Federal Pipeline Inspectorate. Fina Antwerp Olefins, FLIR Systems AB, Flowtite Technology - Aminiti Group, Poster Wheeler Energia Polska, Franz Schuck GmbH. Freu-



denberg Process Seals GmbH & Co. KG, Fugro Aerial Mapping B.V., Fugro (India) Ltd., GAS CONNECT AUSTRIA GmbH, Gas Versorgung Süddeutschline Solutions, GE Oil&Gas Italy, General Products International, Geological GmbH, GIS Consult GmbH, GL Noble Denton, Global Infrastructure Partners Technology, GTU Ingenieurgesellschaft, H. BUTTING GmbH & Co. KG, Halrenknecht AG, Hölscher Wasserbau GmbH, HOT Engineering & Construc-ILF Consulting Engineers, IMASONIC, IMPAC Offshore Engineering GmbH, sack KG, Ing.-Büro Baur und Kropp, Ing.-Büro Udo Wiese, Institute of Eco-Lines (INGL), ITAC Software AG, ITI Energy, IXBLUE, Jiangyin Sanlin Machin-Technologie Ltd, KazStroy Service, Kebulin Gesellschaft / Kettler GmbH &



Consult GmbH, Fugro Engineers S.A. / N.V., Fugro Weinhold Engineering GmbH, Future Pipe Industrials LLC, FW-FERNWÄRME-TECHNIK-GmbH, GAIL land GmbH, GASCADE Gastransport GmbH, GasMin Limited, Gasnetz Steiermark GmbH, GAZPROM Germania GmbH, GDF SUEZ, GE Oil & Gas - PII Pipe-Survey of Belgium - Royal Belgian Institute of Natural Sciences, GEOMAGIC GmbH, Geoplin plonovodi d.o.o, GESO GmbH, GHIZZONI S.p.A, Giftge Consult (GIP), GOTTSBERG Leak Detection GmbH, GRÄBENER MASCHINENTECHNIK GmbH & Co. KG , Gregg Engineering, GSTT - German Society for Trenchless liburton, Harald Beck Innovation und Konstruktion, Heerema Marine Contractors B.V., Hellenic Air-Force Academy, Hermann Sewerin GmbH, Hertion Co., HTI COLLIN KG, HYTORC-S ein Bereich der Barbarino & Kilp GmbH, identis design-gruppe, IKT-Institut für Unterirdische Infrastruktur GmbH, Indian Institute of Technology, IndianOil Corporation Ltd. (Pipelines), Induction s.r.L., Industrial Innovations BV, Infracor GmbH, InfraServ GmbH+Co Knapnomic and Social Development, International Aramoon Corp., IPLOCA, IPSCO GmbH, IRO - Institut für Rohrleitungsbau Oldenburg, Israel Natural Gas ery & Piping, Joh. Heinr. Bornemann GmbH, Jolijo Construction and Electrical, JP "Transnafta", K+S Kali GmbH, Kaeser Kompressoren GmbH, Kasper Co. KG, KEMA, Kepala Seksi Enjiniring Jaringan, Kern AG, Keymay Industries, Kitz Corporation, Kleiss & co bv, KNI Dynapad GmbH, KÖTTER Consulting

Engineers KG, KROHNE Messtechnik GmbH, KROHNE Oil & Gas, Kuwait Oil Company, KW Köolajvezetéképitö Zrt., Kyrlov Shipbuilding & Research Institute, LBEG - Landesamt für Bergbau, Leitungsbau und Baubetrieb, Libyan Petroleum Institute, Liderroll, Lincoln Electric, LIOS Technology GmbH, Ludan Engineering Co. Ltd., Maats Pipeline Equipment, Macaw Engineering, MAGNUM Automatisierungstechnik GmbH , Mankenberg GmbH, Mannesmann Fuchs Rohr, Martin Bohsung GmbH, MAX STREICHER GmbH & Co. KG aA, Mechanical Engineering Department, MEI, Mellitah Oil and Gas B.V.I, MERO CR a.s., MESTEE, Meyer & John GmbH & Co. KG, Micron Optics, Ministère des Hydrocarbures, Ministero Degliaffari Esteri, Ministry of Works, MiRO GmbH & Co. Kg, Modern Design & Eng. Consulting, MOL Hungarian Oil and Gas Co, ms.GIS informationssysteme gmbh, MWV, N.P. Inspection Services GmbH, Nacap GmbH, Nanjing Ioyal Industry Co.,Ltd, National Institute for Public Health and the Environment, National Iranian Gas Company, National Technical University, Nauka-Service, NDRC - National Development and Reform Commission, NDT Systems & Services, Nippon Steel Corporation, Nord Stream AG, Nord-West Oelleitung GmbH, ObjektScan GmbH, Oile Gas Journal, OIL GAS European Magazine, Oil India Ltd., Oil Marketeers, OLEODUCTO BICENTENARIO DE COLOMBIA S.A.S, OMEGA Company, Omnisens, OMV Refining & Marketing GmbH, ONG-IT GmbH, ONLINE ELECTRONICS LTD, ONTRAS - VNG Gastransport GmbH, Opta Sense - Qi-

netiQ Group plc, Orbitalum Tools GmbH, Osborn International GmbH, Palladian Publications, PAN. D. KARVELIS & SIA EE, PC Myanmar (Hong Kong), Pemex, PennWell Petroleum Division, Petrobras Transporte - Transpetro, Petrochina Company Limeted, PETRONAS Carigali, PETRONAS Gas Berhad, Petrotech, Inc., PIM Ltd, Pipeline & Gas Journal, Pipeline Consulting, Pipe-Team GmbH, Pipeline Machinery International LP, Pipeline Services & Products GmbH, Pipestream, Pipesurvey International, PNS Services B.V., Politecnico di Milano, POSCO Europe, PPS PRCI - Pipeline Research Council International, Presse-Media-Service GmbH, Prof. Burmeier Ingenieurgesellschaft mbH, Profundis, Prüf- und Zertifizierungsstelle ZELM Ex, PSE Engineer-Pipeline Services GmbH, PT Badak NGL, Quest Integrity Group, Rädlinger primus line GmbH, RAG, RASMUSSEN GMBH, RBV, Reduct NV, REHAU AG+Co, Reichhold, rff Rohr Flansch Fitting chines Ltd., RIVM, Riyadh Sewerage Operation & Maintenance Program, ROMSTAR SDN BHD, ROPLAST Intelligent Plastic Solutions, ROSEN Europe B.V., Rosen Group, ROSEN Swiss AG, Rot N.V., RTRC Germany, Rudolf Flender GmbH + Co. KG, Ruhrpumpen GmbH, Ruhr-Universität Bochum-Lehrstuhl für Tunnelbau, RWE Rheinland Westfalen Netz AG, RWE Transgas Net; s.r.o., Consult GmbH, Sc. CONPET S.A., Safir Engineering, Salzgitter Mannesmann Forschung GmbH, Saudi Aramco, Schönbeck GmbH&Co.KG, Schweißtechnische Lehr-und Versuchsanstalt Halle GmbH, Siemens, SINTEF Materials and Chemistry, SIOT S.P.A., SKL Engineering & Contracting GmbH, Samart Pipe Company, SMS Meer GmbH, NTGN TRANSGAZ S.A. Medias, Solomon Asso-STATS (UK) Limited, Steffel GmbH, Sterilos PLC, Steweag Steg GmbH, STOPAQ B.V., Süd-Chemie AG, Sui Southern Gas Company, Superofficina.net, SustainX, Inc., Synodon Inc., T.D. William



id Europe GmbH, OptaSense - Qi-Penspen, Pergam-Suisse AG, line Control, Pipeline Ingenieur-Pipeline Systems GmbH, PPSA, ing GmbH, PSI AG, P-Systems Handels GmbH, Ridgway Materdam Antwerpen Pipleiding RWTH Aachen University, S&P GmbH, Sealweld Corporation , trial Marketing, Siegthalerfabrik ciates Ltd., Sonatrach, STATOIL, son, TAI - Transaloine Ölleitung



GmbH, Tata Consultancy Services, Tata Steel Research, Tatco Boring Est., TAU Ingenieurgesellschaft mbH, TCI-Environment International N.V., TD Williamson, TDW Offshore Services AS, Tebodin Consultants & Engineers, Tebodin Netherlands B.V., Technical Toolboxes, Technip Germany GmbH, TechnoPipe, Tecnor, Teledyne Cormon Ltd, Tesla Holding A.S., The Oil and Pipelines Agency, Thyssengas GmbH, ThyssenKrupp Mannex GmbH, Toho Gas Co., Tracerco Alfa Aesar GmbH & Co KG, Tracerco UK, Tractebel Engineering (GDF SUEZ), Tractor Technik Gmbh & Co.KG, Tranos Contracting Limited, Trans Adriatic Pipeline (TAP) AG, Transalpine Ölleitung in Österreich Ges.m.b.H, Transnafta, Transpetro (Petrobras Transporte), Transport Research Laboratory Limited, TU Clausthal, TU Dresden, TÜV International GmbH, TÜV Nord SysTec GmbH&Co.KG, TÜ NORD Systems GmbH & Co. KG, TÜ Rheinland Industrie Service GmbH, TÜV SÜD Industrie Service GmbH , Tuxtepec Institute of Technology, Tyco Flow Control , Uni. Erlangen / Departments Werkstoffwissenschaften, UNIFLEX-HYDRAULIK GmbH, University of Applied Sciences Gelsenkirchen, University of Boumerdes, University of Leoben, University of Petroleum and Energy Studies, University of Rome "Tor Vergata", University of Stavanger, URBAN-Verlag Hamburg/Wien GmbH, V & M DEUTSCHLAND GmbH, Vhelbherg Corporation, VIETZ GmbH, Viser & Smit Hanab. b.v., V-LINE EUROPE, VNG Verbundnetz Gas AG, Vo Tech Filter GmbH, Vogel Business Media GmbH&Co.KG, Voith Turus GmbH & Co. KG, Volvo Construction Equipment GmbH & Co. KG, Volth Universiteit Brussel, Vrijie Universiteit Brussel, Group SURF, Vulkan Verlag GmbH / Oldenbourg Industrieverlag GmbH, Wold Pipelines, Valian Stewater Projects Ltd, Weatherford Pipeline & Speciality, Werner Watznauer Alpine Bau GmbH, Weit LB, Wingas GmbH, Wintershall Holding AG, Wood Group Integrity Management, World Pipelines, Yalian Stele



