

**8:30 REGISTRATION & WELCOME COFFEE**

**AUDITORIUM**

<b>9:30</b>	Opening by Conference Chairman Babak Bahar, Material Specialist, Kvaerner, Norway
<b>10:00</b>	<b>Plenary:</b> Welding duplex piping - challenges and experiences. Dr Lars Haldorsen, Leading Advisor, Metallic Materials and Welding R&T FT MMT, Statoil ASA, Norway
<b>10:30</b>	<b>Plenary:</b> The development of Chinese duplex stainless steel in recent years. Professor Song Zhigang, Director Professor of the Iron & Steel Research Institute, China

**11:00 COFFEE BREAK**

<b>11:30</b>	<b>Plenary:</b> Developments in the consumption and demand of duplex stainless steels both during and after the lifting of the UN sanctions in Iran. Professor Ali Davoodi, Metallurgical and Materials Engineering Department, Faculty of Engineering, Ferdowsi University of Mashhad, Iran
<b>12:00</b>	<b>Plenary:</b> Application of super duplex stainless steel in umbilical systems and its compatibility with operation fluids. Dr Xiaoxue An, Principal Engineer (Metals), Materials /Corrosion Lead, Technip Umbilical, UK

**12:30 LUNCH** **Be sure to visit SPEAKERS CORNER in the exhibition area**

**14:15 SHORT COURSE: 'All about duplex' Held in the auditorium - OPEN TO ALL**

	<b>ROOM 1</b>	<b>ROOM 2</b>	<b>ROOM 3</b>
<b>14:15</b>	<p><b>Workshop: Application limits for duplex stainless steels at elevated temperatures in the process industries</b> Moderators: Jan Baas, CB &amp; I &amp; John Houben, Exxon Mobil</p> <p>This workshop addresses issues that arise when using duplex stainless steels above 250°C, including successful applications and failures. Maximum allowable design conditions (use of dual design conditions), effect of aging and use of TTT curves and the quality testing required will be discussed. The upper temperature limits and exposure times for lean duplex, 2205 DSS and SDSS will also be addressed.</p> <p><b>Presenters:</b></p> <ul style="list-style-type: none"> <li>• Duplex stainless steels at elevated temperature-limitations and possibilities. <i>Jan-Olof Nilsson, Sandvik</i></li> <li>• The phenomena of spinodal decomposition. <i>Jan Jonson, Outokumpu</i></li> <li>• Effect of ageing on lean duplex UR 2202 properties for plates and welds. <i>Sarata Cissé, Arcelor Mittal</i></li> <li>• Elevated Temperature Phase Stability of ATI 2003 Mo-containing lean duplex alloy. <i>David Bergstrom, ATI Allegheny Ludlum</i></li> </ul>	<p><b>Welding challenges, innovations and technologies</b> Moderator: Rob Spelt, Spelt Engineering &amp; Contracting</p> <p><b>Presenters:</b></p> <ul style="list-style-type: none"> <li>• Weldability and weld properties of Aperam DX2202. <i>Jerome Bridel, Aperam</i></li> <li>• Corrosion of welded stainless steel – experience, failures and solutions. <i>Elin Westin, voestalpine Böhler Welding Austria</i></li> <li>• Application of microstructure characterisation techniques to reveal corrosion and EAC Propensity in a grade 2205 Multi-Pass Weld. <i>Prof. Dirk. Engelberg, University of Manchester</i></li> <li>• Formation mechanisms of weld root laws in duplex stainless steels and effect on corrosion resistance. <i>Dr Usani Ofem, TWI Ltd Cambridge, UK</i></li> <li>• Ferrite content in the heat affected zone of duplex stainless steels. <i>Amélie FANICA, ArcelorMittal</i></li> <li>• Microstructural Changes in Heating Process for Super Duplex Stainless Steel and its Thermal Deformation Behavior. <i>Zhou Candong, Baosteel</i></li> </ul>	<p><b>Manufacture of the duplex stainless steel family</b> Moderators: Dr. Iris Rommerskirchen, W. Schulz &amp; Joelle Greenwood, Salzgitter Mannesmann Stainless Tubes</p> <p>This session consists of six very interesting papers from material experts around the world covering diverse manufacturing aspects of lean-, standard- and super duplex stainless steels. These include practical examples of the hot isostatic pressing technology of certain complex shapes by maintaining homogeneous material properties. Additionally the HISC sensitivity of 25% Cr Superduplex as a function of deformation is characterized. Further the influence of hot deformation on the microstructure and the (intermetallic) phase precipitation pattern of different Superduplex grades will be outlined. The session will be rounded up with presentations about the cold finishing of duplex and super duplex stainless steels in order to achieve higher strength values and the effect of work hardening of lean duplex stainless steel. The deep drawability and springback behavior of lean duplex stainless steels will be compared to a low-nickel austenitic stainless steel 304 by studying the plasticity and phase transformation behavior of Lean Duplex Stainless Steels.</p> <p><b>Presenters:</b></p> <ul style="list-style-type: none"> <li>• Impact on mechanical properties included HISC resistance on cold straightened HIPed 25% Cr duplex pipes. <i>Daniel Gonzalez, Bodycote</i></li> <li>• Ways to improve operational properties of duplex seamless steel tubes. <i>Andrey Balyev, Centraviss</i></li> <li>• Effect of work hardening on forming properties of the lean duplex stainless steel sheet. <i>Eiichiro Ishimaru, Nippon Steel &amp; Sumikin Stainless Steel Corp.</i></li> </ul>

**15:30 COFFEE BREAK**

<b>15:45</b>	<ul style="list-style-type: none"> <li>• Successful applications of DSS at elevated temperatures in refineries and petrochemicals. <i>John Houben, ExxonMobil Research &amp; Engineering</i></li> </ul>	<ul style="list-style-type: none"> <li>• Heavy-wall duplex welding: a study on ferrite content and hardness of 22% Cr duplex stainless steel welds in air-cooled heat exchanger header boxes. <i>Mikihiro Sakata, EN Technology Center, JGC Japan</i></li> </ul>	<ul style="list-style-type: none"> <li>• Hot deformation of super duplex stainless steels. <i>Clara Herrera, Deutsche Edelstahlwerke</i></li> </ul>
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**17:00 EXHIBITION AND NETWORKING DRINKS**

**17:40 DUPLEX WORLD LIFETIME ACHIEVEMENT AWARD**

**17:50 SPEAKERS CORNER PROGRAM**

**18:30 BUSES DEPART FOR DUPLEX WORLD NETWORKING DINNER**

8:30 REGISTRATION & WELCOME COFFEE

AUDITORIUM

9:00	<b>Plenary:</b> Duplex and super duplex piping and valves applications in the offshore industry. Karan Sotoodeh, Senior Piping & Valve Engineer, Aker Solutions, Norway
9:30	<b>Plenary:</b> New and up-dated experiences of duplex stainless steels in a broad range of applications; development of standards and their importance to the continued expansion of duplexes. Poul-Erik Arnvig, Vice President Global Market Development, Outokumpu, Sweden
10:00	<b>Plenary:</b> The development and application of duplex stainless steels in the urea and fertilizer industry. Alex Scheerder, Head of Inspection & Materials Engineering, Stamicarbon, the Netherlands

10:30 COFFEE BREAK

	ROOM 1	ROOM 2	ROOM 3
11:00	<p><b>Workshop: Low temperature applications of duplex stainless steels</b> Moderator: Guri Nustad, Aker Solutions</p> <p>This workshop will focus on the use of duplex grades in low temperature applications (<math>\leq 30^{\circ}\text{C}</math>). We will discuss how material properties change with decreasing temperature and the reasoning behind. Delegates are invited to send questions to the panel ahead of the conference, so these can be addressed during the workshop.</p> <p><b>Presenters:</b></p> <ul style="list-style-type: none"> <li>• Raymond Cordewener, Bruck Group</li> <li>• “The development of ZERON® 100 AFP® Super Duplex Stainless Steel Manufacturing and Welding Procedures to Meet Low Temperature (minus <math>70^{\circ}\text{C}</math>) Impact Toughness Requirements Associated with Potential Joule –Thompson Cooling of Subsea Equipment.” Akin Fajimi, Rolled Alloys.</li> <li>• Root cause of DSS embrittlement at sub-zero temperatures. Dr Marina Knyazeva, Ruhr-Universität Bochum</li> <li>• Duplex Stainless Steels for Artic Applications. Sarata Cisse, ArcelorMittalGroup</li> </ul>	<p><b>Recent developments of using duplex in structural applications</b> Moderator: Claes Tigerstrand, Outokumpu</p> <p>This session will focus on critical factors to facilitate further growth of duplex in structural applications: how to enable efficient use according to prevailing design standards, where important developments have taken place recently and evidence from existing structures to justify the duplex value proposition of higher structural efficiency, durability and lower life cycle costing.</p> <p><b>Presenters:</b></p> <ul style="list-style-type: none"> <li>• Advances in the design of duplex stainless steel structures in the Eurocodes. Nancy Baddoo, Steel Construction Institute UK</li> <li>• Inspection of existing duplex bridges. Graham Gedge, Arup UK</li> <li>• The experience of stainless steel as construction material in bridges. Sukanya Hägg Mameng, Outokumpu</li> <li>• Experience with Duplex in structural applications after 10 to 20 years of service. Didier Paul, Industeel</li> </ul>	<p><b>Corrosion &amp; performance characterisation</b> Moderators: Lena Wegrelius, Outokumpu &amp; Prof. Dirk Engelberg, University of Manchester</p> <p>This workshop focuses on the corrosion and stress corrosion cracking propensity of duplex stainless steel with exposure to demanding environments. A broad range of aspects to characterise and optimise microstructure performance will be discussed, including mechanical effects, surface film properties, and environmental factors.</p> <p><b>Presenters:</b></p> <ul style="list-style-type: none"> <li>• Stress corrosion cracking and atmospheric corrosion resistance of duplex stainless steels for architecture, building and construction. Sandra Le Manchet, ArcelorMittal</li> <li>• Influence of surface grinding on residual stresses and chloride-induced stress corrosion cracking of Forta DX 2304 duplex stainless steel. Nian Zhoua, Dalarna University</li> <li>• Corrosion behavior deteriorated by the residual surface defect of duplex stainless steel 2205. Laizhu Jiang, Tsingtu Group</li> <li>• Determination of corrosion limit of super duplex 2507. Fiona Ruel, Aperam R&amp;D</li> <li>• Erosion-resistance of the 1.4062 lean duplex for mining industries. Jamila Adem, Ugitech Research Center</li> <li>• Investigation on the composition and semi-conductive property of the passive films on UNS S32101 duplex and UNS S30403 stainless steel. H. Feng, Central Iron &amp; Steel Research Institute</li> </ul>

13:00 LUNCH **Be sure to visit SPEAKERS CORNER in the exhibition area**

14:30	<p><b>Corrosion</b> Moderator: Jacko Aerts, DSM</p> <p>This paper session focusses on understanding and applying the corrosion resistance capabilities of duplex, which typically fill in the gap between standard austenitic stainless steels and Ni-base alloys. Papers cover crevice corrosion and stress corrosion cracking mechanisms which are important failure modes for DSS. Other papers present how this affects real world applications of tubes and pipes, and what the available corrosion tests can tell you (or not) about the quality of the duplex stainless steels you have.</p> <p><b>Presenters:</b></p> <ul style="list-style-type: none"> <li>• A consideration on crevice corrosion of Duplex stainless steel. Jun'ichi Sakai, Waseda University</li> <li>• Solution for sea water cooled heat exchangers- Sandvik grades SAF 2507 &amp; 2707 HD. Barinder Ghai, Sandvik Materials Technology</li> <li>• Cathodic and Anodic Micromechanisms. Dr M. Knyazeva, Ruhr-Universität Bochum</li> <li>• Seamless Superduplex Pipes for OCTG applications in accordance with API 5 CRA. Dr Iris Rommerskirchen, W. Schulz</li> <li>• Corrosion tests on super duplex stainless steels – significance and informational value. H. Schlerkmann, Salzgitter Mannesmann Stainless Tubes</li> </ul>	<p><b>Metallurgy</b> Moderator: Jean Denis Mithieux, Aperam</p> <p>Phase transformation during thermomechanical treatments is a key issue for the performance of duplex stainless steel, considering both the optimisation of austenite fraction and the minimization of intermetallic phase precipitation. This session highlights important technical topics for industry such as characterization methods, description of metallurgical mechanisms and prediction of transformation kinetics.</p> <p><b>Presenters:</b></p> <ul style="list-style-type: none"> <li>• Quantification of intermetallic phases and centerline stringers of super duplex stainless steel. Florent Krajcarz, Aperam</li> <li>• Precipitation of sigma and chi phases in cast super duplex stainless steels. Ricardo Sousa, FERESPE, University of Texas at Austin and University of Porto - Department of Metallurgical and Materials Engineering</li> <li>• Recent advances in dissolution kinetics of sigma phase in duplex stainless steels. Paolo Ferro, University of Padua</li> <li>• Effects of solution annealing temperature and quenching transfer time on austenite spacing of duplex stainless steels forgings. Giordano Camicia, Siderforgerossi Group</li> <li>• Improving the low temperature impact properties &amp; corrosion resistance in super duplex stainless steel weld metal and castings. Steve Roberts, Goodwin Steel Castings</li> </ul>
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16:30 NETWORKING DRINKS UNTIL CLOSING - 17:30