

9:45	Welcome by Duplex World Chairman <i>Mr Bruce Cowe, Senior Materials &amp; Corrosion Specialist, TOTAL</i>		
	<b>DOME 1</b>		
10:00	<b>Market opportunities for duplex stainless steels in applications presently dominated by other materials.</b> <i>Siyoun Chung, International Stainless Steel Forum, Belgium &amp; Manager of the Stainless Solution Team at POSCO, South Korea</i>		
10:30	<b>Duplex in the oil &amp; gas industry; past successes and challenges, newer applications where duplexes are bringing value, and areas in which duplexes can be employed for future work.</b> <i>Dr Thierry Cassagne, Corrosion and Metallurgy Expert, Exploration Production, TOTAL S.A. France</i>		
11:00	Coffee & networking on the exhibition floor		
	<b>DOME 1</b>		
11:30	11:30-13:30 <b>Interactive workshop: Welding &amp; special treatments</b> Moderators: <i>Raymond Cordewener, Loïc Amadu &amp; Rob Spelt</i>	<b>DOME 2</b>	<b>ON THE EXHIBITION FLOOR</b>
12:00	<b>This two-hour workshop begins with a discussion of duplex/ super duplex GTAW pipe welding.</b>  Topics include: - management of welding parameters - conforming to standards and client specifications - technical requirements (corrosion, ferrite content, hardness, tensile, microstructure, etc.)  Followed by: - Effect of welding parameters on microstructure of weldments of newly developed duplex stainless steel (UNS S82551). <i>Kenta Yamada, Nippon Steel Corporation</i>  - Submerged arc welding of duplex stainless steels with additional cold wire - a comparison of different process variants. <i>Juliane Stützer, Otto-von-Guericke-Universität Magdeburg</i>	12:00 – 13:30 <b>Application of duplexes in aqueous environments</b> Moderator: <i>Jacko Aerts, DSM</i>  <b>The high chloride corrosion resistance of duplexes makes them especially suited for applications in a wide range of water types, without the need for additional corrosion protection like coatings. Learn from your peers about the possibilities and benefits of duplexes, as well as the limits of applications. Experience with seawater, river water and wastewater will be presented.</b>  Crevice and pitting corrosion of stainless steel and nickel-based alloys in deep seawater. <i>Charles Leballeur, French Corrosion Institute</i>  Applicability of lean duplex stainless steels to river facilities. <i>Nobuyuki Okada, Nippon Steel Stainless Steel Corp</i>  Localised corrosion of (lean) duplex stainless steels in urban wastewater treatment units. <i>Nicolas Larché, French Corrosion Institute</i>	12:00 – 13:00 <b>Ask Dr Duplex*</b> An informal and interactive clinic to discuss your duplex challenges and problems. All delegates, exhibitors and visitors are invited to pose their questions to the expert panel of duplex professionals.  <i>* Open to exhibitors, visitors &amp; delegates at no charge</i>
13:00	Lunch break 13:00 – 14:30		
	<b>DOME 1</b>		
	<b>! NOTE</b> THE SESSION BELOW TAKES PLACE IN THE HEAT EXCHANGER WORLD CONFERENCE ROOM		
14:30	14:30-16:00 <b>Additive manufacturing: better than wrought?</b> Moderator: <i>Dr David Griffiths, TWI</i>	14:30 – 16:00 <b>Interactive workshop: The limits of duplex stainless steels</b> Moderator: <i>Mark van den Broek, Fluor</i>	<b>ON THE EXHIBITION FLOOR</b>
15:00	<b>Additive manufacturing (AM) processes are rapidly maturing and offer the capability to build a new generation of components with complex designs, enhanced functionality, and rapid repair of existing components previously replaced. These technologies have the potential to change the manufacturing paradigm with rapid production of complex parts locally, using cloud-based design libraries, on-demand. However, with material properties and failure mechanisms rarely considered in detail, this session will discuss the opportunities and drawbacks for AM duplex stainless steel components. Can we consider them to be 'better than wrought' as often advertised?</b>  Discussion points will include: - Case studies of duplex components such as pump impellers; - Opportunities for duplex AM components in valves and heat exchangers; - AM technologies as cladding options in future designs; - Material properties and failure mechanisms of duplex AM components.  - Microstructural & corrosion studies of super duplex produced via additive manufacturing. <i>James Shipley, Quintus Technologies</i>  - WAAM of duplex stainless steels – Influence of welding parameters and filler metal composition on microstructure and properties. <i>Benjamin Wittig, Dr.-Ing. Otto-von-Guericke-University Magdeburg</i>	<b>This session will discuss the unfairly unpopular position of duplex stainless steels in the petrochemical industry. Serious incidents reported in the past decade relating to the incorrect use of the material have resulted in operators avoiding it. The session will try to restore duplex's reputation. Duplexes can be a reliable and economical choice in many process applications when correctly used within their boundary limits. The session will end with new research results about lean duplex 1.4062.</b>  - Specific material degradation mechanisms in petrochemical facilities relating to the use of duplexes. Examples of applications with issues (REACs, reboilers, vacuum condensers etc.), and reliable and economically successful applications of duplexes in the petrochemical industry. <i>Mark van den Broek, Fluor</i>  - For heat exchangers in hydrogen and wet sour service, the problem area is the tube to tube-sheet weld. A best practice approach in designing and welding of tube to tube-sheet connections will be provided. <i>Jan-Willem Rensman, Fluor, coauthor John Houben, ExxonMobil</i>  - Alternative solutions for REACs. <i>Jonas Howing, Sandvik</i>  - Lean duplex stainless steel 1.4062 research to its erosion-corrosion and ballistic properties behaviour. <i>Jamila Adem, Ugitech</i>	15:00-16:00 <b>The application of duplex in bridges</b> The superior corrosion resistance, high strength and lifecycle cost of duplex stainless steels make them the ideal material for the construction of bridges. Join this open session to learn more about this application.  <i>Tim Collins, Secretary-General, International Stainless Steel Forum</i>
16:00	Coffee break		
16:30	16:30-18:00 <b>The use of duplex for storage tanks</b> Moderator: <i>Dr David Farias, Neste</i>	16:30-18:00 <b>Processing for optimal properties</b> Moderator: <i>Dr Willem Van Haften, Shell Global Solutions International</i>	<b>ON THE EXHIBITION FLOOR</b>
17:00	<b>The use of duplex tanks in the petrochemical industries is an important alternative to more traditional solutions, and the application of this family of materials has been increasing in the last decades. This session explores important issues including on-site repairs, lifecycle costs, fabrication challenges, pre-installation issues and a case study examining the causes of a lead duplex tank failure.</b>  Successfully executing on-site repairs; lifecycle costs of duplex vs other materials and lined tanks. <i>Enzo Panella, Gpi</i>  Case study of lean duplex tank failure. <i>Jacko Aerts, DSM</i>  - Duplex tanks in the biofuel industry. - Fabrication challenges, including welding, handling, placement; & updates to codes and regulations - Pre-installation issues; handling, shipping, transport, on-site welding.	<b>This session brings together four experts in the field of manufacturing (super) duplex steel. Processing parameters and the underlying metallurgical mechanisms to obtain optimal mechanical and corrosion properties will be discussed. An interactive Q&amp;A session after each presentation provides the opportunity to develop your insights in this field.</b>  The effects of reduction magnitude and different hot-working processes on the microstructure, mechanical properties and pitting corrosion resistance of SAN-MAC SAF 2205. <i>Munir Al-Saadi, AB Sandvik Materials Technology</i>  Influence of thermal ageing on the mechanical and corrosion properties of the Super Duplex 1.4410 (UR™2507). <i>Sarata Cissé, Industeel R&amp;D, France.</i>  Effect of different cooling methods and heat treatments on the toughness of thick wall extruded duplex stainless steel tubes. <i>Pilar Esteban, Tubacex Group</i>  Hardness testing of super duplex 2507. <i>Rodrigo Signorelli, Outokumpu</i>	17:00-18:00
19:30	Networking dinner on the SS Rotterdam - Tickets available @ <a href="http://www.duplex-world.com/duplexworld2021">www.duplex-world.com/duplexworld2021</a>		

09:00	Visit the exhibition floor		
	<b>DOME 1</b>	<b>DOME 2</b>	
09:30	09:30-11:00 <b>Meeting the challenges of producing duplex stainless steels</b> Moderator: <i>Prof. Thomas Ladwein, Aalen University</i>	09:30-11:00 <b>Ensuring the security of the supply chain</b> Moderator: <i>Joelle Greenwood, Mannesmann Stainless Tubes</i>	<b>ON THE EXHIBITION FLOOR</b>  10:00 – 11:00 <b>Duplex in coastal structures</b> As climate change leads to rising sea levels, safeguarding communities and land in coastal areas is a growing priority. Duplex is the ideal material for structures in coastal environments; join this open session to learn more.  <i>Tim Collins, Secretary-General, International Stainless Steel Forum</i>
10:00	<b>“Duplex stainless steels are different, not difficult”. A thorough understanding of their metallurgy as well as using the appropriate software tools and manufacturing utilities assures a flawless production and high-quality products.</b>  Production optimisation due to real-time information of profile and surface defects on rolling products. <i>Johann Peters, LAP GmbH</i>  Cause analysis of strip breakage of 2205 duplex stainless steel during hot annealing and pickling. <i>Leilei Zhou, Baosteel</i>  Heat resistant high alloy furnace rolls for the manufacture of duplex stainless steels. <i>Dr Shankar Venkataraman, Schmidt + Clemens</i>	This session brings together four supply chain experts. Challenging the robustness of the supply chain: traceability, safety, security, reliability and integrity, are key. An interactive Q&A session after each presentation provides the opportunity to develop your insights in this field, for which solutions are not yet fully mature.  Steel fraud (counterfeit material). <i>Mohamed Mohamedi, Aramco NL</i>  How blockchain technology can modernise quality management and expediting, creating supply chain provenance and transparency. <i>Tom Meulendijk, SteelTrace</i>  Innovative recycling technologies turn waste into resources, traceability of recycled material. <i>Dr Filipe Costa, CRONIMET Envirotec GmbH</i>	
11:00	Coffee break		
	<b>DOME 1</b>	<b>DOME 2</b>	
11:30	11:30-13:00 <b>Welding duplex stainless steels</b> Moderator: <i>Dr Iris Rommerskirchen, Eisenbau Krämer</i>	12:00-13:15 <b>Infrastructure, Construction &amp; Desalination Plant - Experience and Application Limits for Duplex Stainless Steels</b> Moderator: <i>Dr Dirk Engelberg, University of Manchester</i>	<b>ON THE EXHIBITION FLOOR</b>  12:00- 13:00 <b>Ask Dr Duplex*</b> An informal and interactive clinic to discuss your duplex challenges and problems. All delegates, exhibitors and visitors are invited to pose their questions to the expert panel of duplex professionals.  <i>* Open to all at no charge</i>
12:00	<b>The interaction of alloying elements and welding parameters offers a variety of exciting effects on microstructure and weld integrity of Duplex stainless steels.</b>  Laser pulsed welding: Effect of the welding process on the microstructure of the UNS S31803. <i>Stefan Ulrich, Koehler Institute of Joining and Material Testing</i>  Appropriate welding approach of super duplex 25%Cr seamless pipes for subsea applications: Effect of alloying elements and modus operandi. <i>Dr Lars Schemmann, Salzgitter Mannesmann Forschung GmbH</i>  A parametric study on TIG weldability of cold-rolled Aperam DX2507 super duplex. <i>Jerome Bridel, Aperam</i>	<b>This interactive workshop provides a forum to discuss typical service applications and practical experiences of using the different duplex stainless steel grades for construction, infrastructure (bridges, storage tanks, etc.), and in desalination plants. The service performances envelopes, operational limitations, and lessons learned will be discussed.</b>  Avoiding corrosion in SWRO desalination plants. <i>Roger Francis/Benoit van Hecke, Nickel Institute</i>  Duplex stainless steel as construction material in bridges and storage tanks: the result of inspection in various European environments. <i>Sukanya Hägg Mameng, Outokumpu Stainless AB</i>	
13:00	Lunch 13:00 – 14:30		
	<b>DOME 1</b>	<b>DOME 2</b>	
14:30	14:30-16:00 <b>Ferrite measurements: Historical techniques with new possibilities!</b> Moderator: <i>Jan Jonsson, Outokumpu</i>	14:30-16:00 <b>Interactive workshop: Duplex applications &amp; success stories</b> Moderator: <i>Barinder Ghai, Sandvik Material Technologies</i>	
15:00	<b>An overview of old and completely new methods for ferrite measurement methods will be given, with some relevant examples of applications.</b>  UT response of 2205 duplex stainless steel after isothermal annealing at 1050°C featured by different soaking times. <i>Andrea Gruttadauria, Politecnico di Milano</i>  Heat-affected zone ferrite content control of a new duplex stainless steel grade with enhanced weldability. <i>Romain Monier, Industeel – ArcelorMittal</i>  Considerations for measuring ferrite content in Duplex Stainless Steels with image analyses, IA. <i>Jan Jonsson, Outokumpu.</i>	<b>This workshop focuses on some key applications relating to lifecycle costing and other advantages of using duplex. Industry experts will present case studies and share experiences. The key objective is an open discussion with the audience, listening to their experience and challenges with upgrading to duplex materials. This will be a great opportunity for industry experts to listen, discuss and learn how to save costs by using more duplex.</b>  Success with lean duplex castings. <i>Dr Shankar Venkataraman, Schmidt + Clemens GmbH + Co. KG</i>  Longer heat exchanger lifecycles with duplex stainless steels. <i>Angela Philipp, Sandvik Materials Technology Deutschland GmbH</i>  Services contributing to the success of duplex applications. <i>Marie Louise Falkland, Outokumpu</i>	