



INFACON XII – 6-9 JUNE, 2010, HELSINKI, FINLAND.

TECHNICAL SESSIONS AT INFACON XII

MONDAY, JUNE 7			
	EUROPAEA - ROOM		
9:00 – 9:15	Welcome address and opening of the conference, Pertti Korhonen, CEO, Outotec Oyj		
9:15 – 9:30	Address of Finland, State Secretary Riina Nevamäki		
9:30 – 9:45	Address of Infacon, Nic A. Barcza		
9:45 – 10:10	Trends and challenges in stainless steel industry, Kari Parvento, Executive Vice President, Outokumpu Oyj		
10:10 – 10:30	Toward sustainability in ferroalloys production, professor Lauri Holappa, Aalto University		
10:30 - 11:00	Coffee break		
	EUROPAEA - ROOM	FENNIA I - ROOM	FENNIA II - ROOM
	<i>Status of Ferroalloy Industry</i> <i>Chair: Niilo Suutala, Outokumpu Oyj</i>	<i>Modelling and Simulation</i> <i>Chair: Guven Akdogan, Stellenbosch University</i>	<i>Ferromanganese – Pretreatment for Smelting I</i> <i>Chair: Gabriella Tranell, NTNU</i>
11:00 – 11:30	Changes in the North American ferroalloys industry structure and trends in the industry during the past 20 years , Didaleusky, J.R., <u>Jorgenson, J.D.</u> , Corathers, L.A., Fenton, M.D., Kuck, P.H., Papp, J.F., Polyak, D.E., Shedd, K.B., U.S. Geological Survey, Reston, USA	Thermodynamical computations in carbothermal and metallothermic ferroalloy processes , <u>B. Derin</u> ¹ , O. Yucel ¹ , K. Hack ² , 1) Istanbul Technical University, Metallurgical and Materials Eng. Dept., Istanbul, Turkey, 2) GTT-Technologies GmbH, Herzogenrath, Germany	Properties of manganese ores and their change in the process of calcination , B. Sorensen ¹ , S. Gaal ² , M. Tangstad ¹ , E. Ringdalen ² , R. Kononov ³ and <u>O. Ostrovski</u> ³ , 1) NTNU, Trondheim, Norway, 2) SINTEF, Trondheim, Norway, 3) the University of New South Wales, Sydney, Australia
11:30 - 12:00	Current situation and main trends of development of Russian ferro-alloys industry , <u>L.I. Leontyev</u> , V.I. Zhuchkov, Institute of Metallurgy of Ural Division of RAS, Ekaterinburg, Russia	Building a FeNi smelter simulator , <u>H. Oterdoom</u> and R. Degel, SMS Siemag, Düsseldorf, Germany	Decrepiation of Brazilian manganese lump ores , G. L. Faria ¹ , N.C.S. Vianna ² , N. Jannotti ² , C. B. Vieira ¹ , <u>F. G. da Silva Araújo</u> ¹ , 1) Rede Temática em Engenharia de Materiais (REDEMAT/UFOP), Ouro Preto (MG), Brazil, 2) VALE/ Manganese and Alloys Department, Águas Claras, Nova Lima (CONFERIR) (MG), Brazil
12:00 - 12:30	Current state and prospects of ferroalloy industry in Kazakhstan , <u>M. Tolymbekov</u> , S. Baisanov, S. Kim, Chemical-Metallurgical Institute, Kazakhstan	A thermodynamic study on the oxidation of silicon, carbon and chromium in the ferrochrome converter , <u>E-P. Heikkinen</u> ¹ , T. Ikäheimonen ² , O. Mattila ¹ and T. Fabritius ¹ , 1) Laboratory of process metallurgy, University of Oulu, Finland; 2) Outokumpu Stainless, Tornio, Finland	Behavior of agglomerates in ferromanganese production , <u>MM. Tangstad</u> ¹ , D. Leroy ¹ , E. Ringdalen ² , 1) NTNU, Trondheim, Norway; 2) SINTEF, Trondheim, Norway
12:30 - 13:30	Lunch break		

	EUROPAEA - ROOM	FENNIA I - ROOM	FENNIA II - ROOM
	<i>Health</i> <i>Chair: Markku Huvinen, Outokumpu Oyj</i>	<i>Ferrochromium – Pretreatment for Smelting</i> <i>Chair: Mauri Kauppi, Outokumpu Oyj</i>	<i>Ferromanganese – Pretreatment for Smelting II</i> <i>Chair: Thomas Magnussen, Vatvedt Technology</i>
13:30 - 14:00	Use of read-across in the health risk assessment of ferrochromium alloys under REACH , <u>H. Stockmann-Juvala</u> ¹ , A. Zitting ¹ , I. Odnevall Wallinder ² , G. Darrie ³ and T. Santonen ¹ , 1) Finnish Institute of Occupational Health, Helsinki, Finland, 2) Division of Surface and Corrosion Science, Royal Institute of Technology (KTH), Stockholm, Sweden, 3) International Chromium Development Association (ICDA), Paris, France	Pre-reduction and smelting characteristics of Kazakhstan ore samples , <u>S. McCullough</u> ¹ , S. Hockaday ¹ , C. Johnson ² and N.A. Barcza ³ , 1) Mintek, Randburg, South Africa, 2) University of Cardiff, Cardiff, United Kingdom, 3) Oriol Resources Ltd, London, United Kingdom	Upgrading of Mn / Fe ratio of low-grade manganese ore for ferromanganese production , <u>V. Kivinen</u> ¹ , H. Krogerus ² and J. Daavittila ¹ , 1) Outotec Oyj, Finland, 2) Outotec Research Oy, Finland
14:00 - 14:30	Bioaccessibility of ferro-chromium and ferro-silicon-chromium particles compared to pure metals and stainless steel – aspects of human exposure , K. Midander ¹ , A. de Frutos ^{1,2} , Y. Hedberg ¹ , G. Darrie ³ , <u>I. Odnevall Wallinder</u> ¹ , 1) Div. Surface and Corrosion Science, School of Chemical Science and Engineering, KTH, Stockholm, Sweden, 2) Centro Nacional de Investigaciones Meta Centro Nacional de Investigaciones Metalúrgicas, Madrid, Spain, 3) International Chromium Development Association, Paris, France	Effects of oxidation on the microstructure and reduction of chromite pellets , B. Zhao and <u>P.C. Hayes</u> , PYROSEARCH, The University of Queensland, Brisbane, Australia	The effect of potassium and zinc circulation on agglomeration of a charge in SAF , <u>D. Slizovskiy</u> , M. Tangstad, Norwegian University of Science and Technology/Department of Materials Science and Engineering
14:30 - 15:00	Theoretical and practical aspects of Cr(VI) in the South African ferrochrome industry , <u>JP Beukes</u> ¹ , NF Dawson ² and PG van Zyl ¹ , 1) Chemical Resource Beneficiation, North-West University, Potchefstroom, South Africa, 2) Xstrata Alloys, Rustenburg, South Africa	Research & development initiatives on the briquetting technology and its commercialisation for Richards Bay plant , <u>R. Sen</u> , D. Mukherjee, J. Jansen Van Vuuren, W. DeVilliers, S. Banerjee, Tata Steel (Kzn) (Pty) Limited, South Africa	Ore properties in melting and reduction reactions in silicomanganese production , <u>E. Ringdalen</u> ¹ , O. Ostrovski ² , S. Gaal ¹ , 1) SINTEF Materials and Chemistry, Trondheim Norway, 2) the University of New South Wales, Sydney, Australia
15:00 - 15:30	Coffee break		
	<i>Environment – General</i> <i>Chair: Lauri Holappa, Aalto University</i>	<i>Ferrochromium Smelting</i> <i>Chair: Tom Curr, Mintek</i>	<i>Ferromanganese Smelting</i> <i>Chair: Merete Tangstad, NTNU</i>
15:30 - 16:00	How the ferroalloys industry can meet greenhouse gas regulations , <u>T. Lindstad</u> , B. Monsen and K. S. Osen, SINTEF Materials & Chemistry, Trondheim, Norway	A laboratory investigation of influence of electric current on the burden reactions in a submerged arc furnace , <u>A. Rousu</u> , O. Mattila and P. Tanskanen, Laboratory of Process Metallurgy, University of Oulu, Finland	Comparing manganese ferroalloy smelting in pilot-scale AC and DC submerged-arc furnaces , <u>H. Lagendijk</u> , B. Xakalashé, T. Ligege, P. Ntikang and K. Bisaka, Council for Mineral Technology, Randburg, South Africa
16:00 - 16:30	Meeting the challenge of sustainability through technology development and integration in ferrochrome submerged arc furnace plant design , <u>M. Dos Santos</u> , TENOVA Pyromet, Johannesburg, South Africa	Utilization of substandard and offgrade raw materials for chromium and manganese ferro-alloys production , V.I. Zhuchkov ¹ , O.V. Zayakin ¹ , <u>A.V. Zhdanov</u> ² , 1) Institute of Metallurgy of Ural Division of Russian Academy of Science, Ekaterinburg, Russia, 2) Urals State Technical University, Ekaterinburg, Russia	Operational improvements of a submerged arc furnace in Kashima works (KF-1) relined in 2006 , <u>T. Ishitobi</u> , K. Ichihara, T. Homma, Chuo Denki Kogyo Co.,Ltd., Kashima Works, Japan
16:30 - 17:00	Recycling of waste materials from the production of FeMn and SiMn , S. Gaal ¹ , M. Tangstad ² , <u>B. Ravary</u> ³ , 1) SINTEF Materials and Chemistry, Trondheim, Norway 2) Norwegian University of Science and Technology, Trondheim, Norway 3) Eramet Norway, Trondheim, Norway	Preliminary characterization of the samples taken from a submerged arc ferrochrome furnace during operation , <u>J. Ollila</u> ¹ , P. Niemelä ² , A. Rousu ³ and O. Mattila ³ , 1) Outotec Oyj, Espoo, Finland, 2) Outokumpu Tornio Works, Tornio, Finland, 3) University of Oulu, Oulu, Finland	Complex processing of iron-manganese ore of central Kazakhstan , Ye. Samuratov, A. Baisanov, <u>M. Tolymbekov</u> , Chemical-Metallurgical Institute, Kazakhstan

TUESDAY, JUNE 8

	EUROPAEA - ROOM	FENNIA I - ROOM	FENNIA II - ROOM
	<i>Environment – Furnaces</i> <i>Chair: Johannes Nell, Hatch</i>	<i>Reductants</i> <i>Chair: Helge Krogerus, Outotec</i>	<i>Ferromanganese Refining I</i> <i>Chair: Sergey Kim, Chemical-Metallurgical Laboratory</i>
8:30 - 9:00	Improving environment in the tapping area of a ferromanganese furnace , <u>B. Ravary</u> ¹ and S. Grådahl ² , 1) ERAMET Norway AS, c/o Sintef, Trondheim, Norway 2) Sintef Materials and Chemistry, Trondheim, Norway	Slag-carbon reactivity , <u>J. Safarian</u> and M. Tangstad, Norwegian University of Science and Technology (NTNU), Trondheim, Norway	Manganese ore and alloys piloting tools at Eramet research , A.Soller, A. Amalric, G. Pochart and <u>G. Nussbaum</u> , Eramet Research, Trappes Cedex, France
9:00 - 9:30	Silicon process- new hood design for tapping gas collection , <u>M. Kadkhodabeigi</u> ¹ , H. Tveit ² and K. H. Berget ³ , 1) Department of Materials Science and Engineering, Norwegian University of Science and Technology (NTNU), Trondheim, Norway, 2) Elkem Thamshavn, Orkanger, Norway, 3) Elkem Silicon Materials, Oslo, Norway	Modelling and optimisation of anthracite treatment in an electrocalcinator , <u>M. M. Gasik</u> ¹ , M. I. Gasik ² , O. Yu. Urazlina ³ , and S. V. Kutuzov ³ , 1) Aalto University, Finland, 2) National Metallurgical Academy of Ukraine, Dnipropetrovsk, Ukraine, 3) JSC “Ukrgrafit”, Zaporizhzhya, Ukraine	Reaction of manganese containing slag with carbon substrate , H. Sun ^{1,2} , M. Lone ¹ , S. Ganguly ³ and <u>O. Ostrovski</u> ¹ , 1) School of Material Science and Engineering, University of New South Wales, Australia, 2) R&D Department, China Steel Corporation, Taiwan; 3) Hatch, Brisbane, Australia
9:30 - 10:00	Continuous improvement for fugitive emissions control , L. Gunnewiek ¹ , B. Ravary ² , P. Cowx ³ , and <u>J. Woloshyn</u> ⁴ , 1) Hatch Ltd., Calgary, Alberta, Canada, 2) Eramet Norway AS, c/o Sintef Materials and Chemistry, Trondheim, Norway, 3) Eramet Norway Sauda AS, Sauda, Norway, 4) Hatch Ltd., Mississauga, Ontario, Canada	Influence of coke particle size on the electrical resistivity of coke beds , <u>P. A. Eidem</u> ¹ , M. Tangstad ² , J. A. Bakken ² and R. Ishak ³ , 1) Eramet Norway AS, c/o Sintef Materials and Chemistry, Trondheim, Norway; previously with, 2) Department of Materials Science and Technology, Norwegian University of Science and Technology (NTNU), Trondheim, Norway, 3) Eramet Norway AS, Porsgrunn, Norway	Electric parameters for an efficient smelting performance of HCFEMn alloy , <u>Y. E. Lee</u> ¹ and M. Tangstad ² , 1) Dongbu Metal Co., Donghae, Korea, 2) Norwegian University of Science and Technology, Trondheim, Norway
10:00 - 10:30	Design of tapping fume extraction systems for ferroalloy furnaces , <u>L. Els</u> ¹ , <u>C. Coetzee</u> ² , <u>O. Vorster</u> ³ , 1) Consulto Enviro CC, Centurion, South Africa, 2) Resonant Solutions (Pty) Ltd, Centurion, South Africa, 3) Resonant Environmental Technologies (Pty) Ltd, Centurion, South Africa	Reductant characterization and selection for ferrochromium production , G. Makhoba ¹ , and <u>R. Hurman Eric</u> ² , 1) Assmang Chrome, Machadodorp, South Africa, 2) School of Chemical and Metallurgical Engineering, University of the Witwatersrand, Johannesburg, South Africa	Development of a dynamic model of the manganese oxygen refining (MOR) converter , J. Nell, <u>I. Nolet</u> , Hatch Africa, Gallo Manor, South Africa
10:30 - 11:00	Coffee break		
	<i>Environment – Dusts</i> <i>Chair: Jan-Olov Wikström, Swerea Mefos</i>	<i>Ferrochromium Production</i> <i>Chair: Pekka Niemelä, Outokumpu Oyj</i>	<i>Ferromanganese Refining II</i> <i>Chair: Michael Gasik, Aalto University</i>
11:00 - 11:30	Processing of manganese furnace dust: drying and zinc oxide reduction , T. Hamano ¹ , R. Shen ¹ , G. Zhang ¹ , P. Brown ² and <u>O. Ostrovski</u> ¹ , 1) University of New South Wales, Sydney, Australia, 2) Tasmanian Electrometallurgical Company, Bell Bay, Australia	Some aspects of the production of ferrochrome alloys in pilot DC arc furnaces at Mintek , <u>S.A.C. Hockaday</u> and K. Bisaka, Council for Mineral Technology, Randburg, South Africa	Thermodynamical aspects of decarburization of manganese melts , <u>V.Ya.Dashevskiy</u> , A.G.Kanevskiy, Baikov Institute of Metallurgy and Material Science of Russian Academy of Sciences, Moscow, Russia
11:30 - 12:00	Major ferroalloy producer improves furnace fume control system by installing baghouse with membrane filter bags , L. Els ¹ , F. Fereday ² , <u>O. Vorster</u> ³ , 1) Consulto Enviro CC, Centurion, South Africa, 2) Gore & Associates INC, Pittsburgh, United States, 3) Resonant Environmental (Pty) Ltd, Centurion, South Africa	Process for effective utilization of low grade chromite overburden , <u>G. Kapure</u> ¹ , C.B. Rao ¹ , V. Tathavadkar ¹ , K. S. Raju ² , 1) Tata Steel Limited, Jamshedpur, India, 2) Ferro Alloys and Minerals Division, Tata Steel Limited, Bannipal, India	Thermodynamics of carbon removal by molten slags from manganese alloy melts , <u>J.H. Park</u> ¹ , G.H. Park ¹ , C.I. Park ¹ , J.G. Park ² , D.J. Min ² , H.C. Jo ³ , Y.E. Lee ³ , 1) School of Materials Science and Engineering, University of Ulsan, Ulsan, Korea, 2) Department of Materials Science and Engineering, Yonsei University, Seoul, Korea, 3) Metallic Materials Research Institute, Dongbu Metal Co. Ltd., Donghae, Korea
12:00 - 12:30	Low temperature carbothermal reduction of siliceous manganese fines , R. Kononov ¹ , <u>O. Ostrovski</u> ¹ and S. Ganguly ² , 1) University of New South Wales, Sydney, Australia, 2) HATCH, Brisbane, Australia	Reduction of chromite fines in solid state using a mixture of gases containing natural gas, hydrogen and nitrogen , <u>C.N.Harman</u> , Facor Alloys Limited, Shreeramnagar, India	Kinetic of nitriding process of ferromanganese alloy , <u>S.N. Ghali</u> , K.M. El-Fawakhry, M.M. Eissa and M.L. Mishreky, Central Metallurgical Research & Development Institute (CMRDI), Helwan, Egypt
12:30 - 13:30	Lunch break		

	EUROPAEA - ROOM	FENNIA I - ROOM	FENNIA II - ROOM
	<i>Recovery from Dusts and Slags</i> <i>Chair: Petrus Pistorius, Carnegie Mellon University</i>	<i>Ferrochromium Refining</i> <i>Chair: CN Harman, Facor Alloys Limited</i>	<i>Other Ferroalloy Fundamentals</i> <i>Chair: Gudrun Saevarsdottir, Reykjavik University</i>
13:30 - 14:00	Vanadium recovery as FeV from petroleum fly ash , Y. Xiao ¹ , C. R. Mambote ² , H. Jalkanen ¹ , Y. Yang ¹ and R. Boom ¹ , 1)Department of Materials Science and Engineering, Delft University of Technology, 2) Consultek Research, Rotterdam, The Netherlands	Oxidation kinetics of ferrochrome under controlled oxygen pressures , H. Wang ¹ , N.N. Viswanathan ² and S. Seetharaman ¹ , 1) Division of Materials Process Science, Royal Institute of Technology, Stockholm, Sweden, 2) Department of Metallurgical Engineering, Indian Institute of Technology Bombay, Mumbai, India	Thermochemical and kinetic databases for the solar cell silicon materials , K. Tang ¹ , E.J. Øvrelid ¹ , G. Tranel ² , M. Tangstad ² , 1) SINTEF Materials and Chemistry, Trondheim, Norway, 2) Norwegian University of Science and Technology, Trondheim, Norway
14:00 - 14:30	Recovery of vanadium from V-bearing BOF-slag using an EAF , M. Lindvall ¹ , S. Rutqvist ² and G. Ye ¹ , 1) Swerea MEFOS, Lulea, Sweden, 2) SSAB Strip Products, Lulea, Sweden	Refining of charge-chrome; a study of some products and applications , C.-J. Rick, Uvån Hagfors Teknologi AB	Slag phase equilibria and viscosities in ferronickel smelting slags , E. Jak and P.C. Hayes, PYROSEARCH, The University of Queensland, Australia
14:30 - 15:00	High purity Mn metal from Mn oxide dust produced by FeMn refining process , K.J. Lee, D.S. Min, C.S. Park, Y.K. Park, H.C. Jo, S.H. Hong, Dongbu Metal Co., Donghae, Gangwon-do, Korea	The aluminothermic production of extra low carbon ferrochromium from low grade chromite ore , M.M.Eissa, K.A.El-Fawakhry, M.L.Mishreky, & H.R.El-Faramawy, Steel Technology Department, Central Metallurgical R & D Institute (CMRDI), Helwan, Egypt	Phenomena in thermal treatment of lateritic nickel ores up to 1300°C , A. Buniaku, M. Kekkonen and L. Holappa, Aalto University, Finland
15:00 - 16:00	Coffee break and Poster session		
	<i>Engineering Aspects – Furnaces I</i> <i>Chair: Pekka Santala, Outotec</i>	<i>Engineering Aspects</i> <i>Chair: John Bustnes, Elkem</i>	<i>Ferronickel Smelting</i> <i>Chair: Nic Barcza, Oriol Resources</i>
16:00 - 16:30	Advanced modelling and baking of Söderberg electrodes , RP Meyjes, J Venter and U Van Rooyen, Metix (PTY) LTD, Johannesburg, South Africa	New TiO2 slag plant for CYMG using 30 MW DC furnace , (H. Weitz) ¹ , A. de Jong ¹ , D.Mitchell ² , 1) Bateman Engineering Pty Ltd, Milton Queensland, Australia, 2) Bateman Engineering Projects, Pyrometallurgical Technologies, East Rand, South Africa	Relevant aspects related to production of iron nickel alloys (pig iron containing nickel) in mini blast furnaces , P. von Krüger ¹ , C. A. Silva ¹ , Cláudio Batista Vieira ¹ , F. G. S. Araújo ¹ , V. Seshadri ² , 1) REDEMAT, UFOP-Federal University of Ouro Preto, Brazil; 2) Federal University of Minas Gerais, Brazil
16:30 - 17:00	Mathematical and computational modelling of the dynamic behaviour of direct current plasma arcs , Q.G. Reynolds ¹ , R.T. Jones ¹ and B.D. Reddy ² , 1) Mintek, Randburg, South Africa, 2) CERECAM, University of Cape Town, Rondebosch, South Africa	SAF water leak detection by the measurement of gaseous water vapour , P. Dennis ¹ , Dr. S. Ganguly ² , 1) BHPBilliton TEMCO, Tasmania, 2) Hatch, Brisbane, Australia	High power, shielded-arc FeNi furnace operation – challenges and solutions , C. Walker ¹ , T. Koehler ¹ , N. Voermann ² and B. Wasmund ¹ , 1) HATCH, Mississauga, Canada, 2) HATCH, Brisbane, Australia
17:00 - 17:30	Low cost ferroalloy extraction in DC-arc furnace at Middleburg Ferrochrome , D. Sager ¹ , D. Grant ² , R. Stadler ³ and T. Schreiter ⁴ , 1) ABB Switzerland Ltd., Turgi, Switzerland, 2) Middleburg Ferrochrome (a company in Samancor Chrome), Middleburg, South Africa, 3) ABB Switzerland Ltd., Turgi, Switzerland, 4) ABB Germany Ltd., Mannheim, Germany	Application of high intensity refractory cooling systems in pyrometallurgical vessel design , F. Marx, M. Shapiro, B. Henning, Bateman Engineering Projects, East Rand, South Africa	SNNC: a new ferronickel smelter in Korea , L. Rodd ¹ , N. Voermann ¹ , F. Stober ¹ and B. Wasmund ¹ , S. H. Lee ² , K. Y. Lim ² , J.-H. Yoo ² , S.-J. Roh ² , and J.-H. Park ² , 1) Hatch, Mississauga, Ontario, Canada, 2) SNNC, Gwangyang-si, Jeonnam, Korea

WEDNESDAY, JUNE 9			
	EUROPAEA - ROOM	FENNIA I - ROOM	FENNIA II - ROOM
	<i>Engineering Aspects – Furnaces II</i> <i>Chair: Johan Basson, Outotec</i>	<i>Engineering Aspects – Linings</i> <i>Chair: Timo Fabritius, Oulu University</i>	<i>Ferrosilicon Smelting</i> <i>Chair: Eli Ringdalen, SINTEF</i>
8:30 - 9:00	Developments in the design and construction of DC arc smelting furnaces , <u>F.P. Greyling</u> , W. Greyling and F.I. de Waal, GLPS, Middelburg, South Africa	Refractory wear and lining profile determination in operating electric furnaces using stress wave non-destructive testing (NDT) , <u>A. Sadri</u> , P. GebSKI, E. Shameli, Hatch Ltd.	Reaction zones in a FeSi75 furnace – results from an industrial excavation , <u>G. Tranel</u> ¹ , M. Andersson ² , E. Ringdalen ³ , O. Ostrovski ⁴ and J. J. Steinmo ⁵ , 1) Department of Materials Science and Engineering, NTNU, Norway, 2) Luleå University of Technology, Sweden (presently with NTNU), 3) SINTEF Materials and Chemistry, Norway, 4) The University of New South Wales, Australia, 5) Finnjord AS
9:00 - 9:30	AC- and DC- smelter technology for ferrous metal production , Dr. G. Kleinschmidt, <u>R. Dege</u> ¹ , M. Köneke, H. Oterdoom, SMS Siemag AG, Düsseldorf, Germany	New refractory lining direction at Jindal Stainless FeCr #1 and #2 furnaces , <u>C. Coetze</u> ¹ , P.H. Lamont ² , P.L. Duncanson ³ , P. Sylven ⁴ , 1) GrafTech Refractory Systems, South-Africa, 2) IRCI, South-Africa, 3) GrafTech Refractory Systems, USA, 4) GrafTech Refractory Systems, Sweden	Current distribution in submerged arc furnaces for silicon metal / ferrosilicon production , <u>G. Saevarsdottir</u> ¹ and J. A. Bakken ² , 1) School of Science and Engineering, Reykjavik University, 2) Department of Materials Science and Engineering, Norwegian University of Science and Technology, Trondheim, Norway
		<i>Applications and Uses</i> <i>Chair: Jouko Härkki, Oulu University</i>	
9:30 - 10:00	Implementation of the first commercial scale DC smelter for ferronickel production from low grade lateritic ores – technology building blocks and lessons learned , (<u>H. Weitz</u>), C.P. Naudé and M.D. Shapiro, Bateman Engineering Projects, East Rand, South Africa	SHS-technology of ferroalloys nitriding , <u>M. Kh. Ziatdinov</u> ¹ , I. M. Shatokhin ² , 1) Tomsk State University, Tomsk, Russia, 2) NTPF ETALON, Magnitogorsk, Russia	Energy balance of a 45 MW (ferro-) silicon sub-merged arc furnace , <u>N. E. Kamfjord</u> ¹ , E.H. Myrhaug ² , H. Tveit ² and B. Wittgens ³ , 1) Norwegian University of Science and Technology, Trondheim, Norway, 2) Elkem Silicon, Trondheim, Norway, 3) SINTEF Materials and Chemistry, Trondheim, Norway
10:00 - 10:30	Evaluating AC and DC furnace water cooling systems using CFD analysis , B. Henning, <u>M. Shapiro</u> , F. Marx, D. Pienaar and H. Nel, Bateman Engineering Projects, East Rand, South Africa	Low-nickel austenitic stainless steels: metallurgical constraints , <u>P.C. Pistorius</u> ¹ and M. du Toit ² , 1) Department of Materials Science and Engineering, Carnegie Mellon University USA, 2) Department of Materials Science and Metallurgical Engineering, University of Pretoria, South Africa	Waste heat utilization from a submerged arc furnace producing ferrosilicon , H. Hjartarson ² , H. Pálsson ² and <u>G. Saevarsdottir</u> ¹ , 1) School of Science and Engineering, Reykjavik University, 2) School of Engineering and Natural Science, University of Iceland
10:30 - 11:00	Coffee break		
	EUROPAEA - ROOM		
11:00 – 11:45	Changes in Ferro Chrome & Ferro Nickel Markets, Heinz Pariser, Alloy Metals & Steel Market Research		
11:45 – 12:15	Carbon reductants for the production of chrome & manganese alloys, Andrew Jones, Resource-Net		
12:15 – 12:20	Announcement of the next conference		
12:20 – 12:30	Concluding remarks of the Chair of Program Committee INFACON XII, Kari Knuutila, CTO, Outotec Oyj		
12:30 - 13:30	Concluding Lunch		