



**final
programme**

**10th European
Conference on
Continuous
Casting**

**Bari • Italy
20-22 October 2021**



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Organised by
**ASSOCIAZIONE
ITALIANA
DI METALLURGIA**

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SCOPE

The 10th European Continuous Casting Conference – ECCC – will be organised by AIM, the Italian Association for Metallurgy, in Bari (Italy) on 20-22 October 2021 with focus on the status and future developments in the casting of steel.

The ECCC is a unique forum for the European continuous casting community to exchange views on the status and the future development of the continuous casting process.

The Conference program is abreast of the latest developments in control and automation, advanced continuous casting technologies, application of electromagnetic technologies and mechanical devices to improve the core microstructure, the lubrication issues for improving the surface qualities. Steel metallurgical issues will be addressed as well as their physical and numerical simulation. The exchange of experience in operational practice, maintenance and first results from the recently commissioned plants will integrate the program.

The Conference aims at promoting the dialogue among the delegates with industrial and academic background and among the participants in former Conferences and new members of the continuous casting community.

ECCC 2020 background

 ECC Florence 1991	1991	Florence
	1994	Düsseldorf
	1998	Madrid
	2002	Birmingham
	2005	Nice
	2008	Riccione
	2011	Düsseldorf
	2014	Graz
	2017	Wien

Cooperating organisations

- Austrian Society for Metallurgy and Materials
- Brazilian Metals and Materials Association
- Centro Nacional de Investigaciones Metalúrgicas
- Centre de Recherches Métallurgiques
- The Chinese Society for Metals
- Croatian Metallurgical Society
- Czech Steel Federation
- DVM, German Association for Materials Research and Testing
- Fédération Française de l'Acier
- Hungarian Mining & Metallurgical Society
- The Institute of Materials, Minerals and Mining
- International Stainless Steel Forum
- The Iron and Steel Institute of Japan
- Jernkontoret
- Korean Institute of Metals and Materials
- The Minerals, Metals & Materials Society
- Société Française de Métallurgie et de Matériaux
- Steel Institute VDEh

COMMITTEES

Conference Chairmen

Dr. Riccardo Carli - Prosimet, Italy

Prof. Christian Bernhard - Montanuniversitaet Leoben, Austria

Scientific and Steering Committee

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KEMPER Gerhard - Hüttenwerke Krupp Mannesmann GmbH, Germany

KÖLBL Nathalie - Montanuniversitaet Leoben, Austria

KROMHOUT Jan - Tata Steel, The Netherlands

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MIKI Yuji - JFE Steel Corporation, Japan

MOSER Herbert - voestalpine Stahl GmbH, Austria

NORITAKA Saito - Kyushu University, Japan

PERI Roberto - Sanac, Italy

PETRITZ Bernd - RHI Magnesita Technology Center, Austria

SOHN II - Yonsei University, Korea

THOMAS Brian G. - Colorado School of Mines, USA

WANG Wanlin - Central South University, China

ZHANG Lifeng - University of Science and Technology, Beijing, China

ZHU Miaoyong - Northeastern University, China

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RAMPININI Gabriele - Forgiatura A. Vienna, Italy - President of AIM Forge Technical Committee

TUESDAY, 19 OCTOBER 2021

17:00 – 18:30 Registration of attendees

WEDNESDAY, 20 OCTOBER 2021

8:00 Registration of attendees

NICOLAUS 1 ROOM

WEDNESDAY, 20 OCTOBER 2021

OPENING SESSION

09:00 Welcome addresses by
Ing. Federico Mazzolari - AIM President
Dr. Riccardo Carli - Prosimet - Conference Chairman
Prof. Christian Bernhard – MU Leoben - Conference Chairman

OPENING LECTURES

09:30 [cc_185] **Developments in continuous casting as reflected in the ECCC Conferences 1991 to 2017**
DIGITAL P.R. Scheller - TU Bergakademie Freiberg, Germany

10:00 [cc_162] **Formation mechanism and new control technology for slab corner transverse crack of micro-alloyed steel**
DIGITAL M. Zhu, Z. Cai - Northeastern University, China

10:30 [cc_122] **Advanced technologies to improve quality of continuously cast slabs**
DIGITAL C.H. Yim, D.G. Hong - Pohang University of Science and Technology, Korea
S.H. Kwon - POSCO Research Laboratories, Korea

11:00 **COFFEE BREAK & OPENING OF THE EXHIBITION**

NICOLAUS 1 ROOM

WEDNESDAY, 20 OCTOBER 2021

MOLD FLUX - APPLICATIONS

Chairperson: NATHALIE KÖLBL

11:20 [cc_095] Effect of shear-thinning behavior on slag entrapment and mold friction during continuous casting

H. Yang, P.E. Ramirez Lopez - Swerim AB, Sweden
D. Mier Vasallo - Sidenor I+D, Spain
M. Cornille - ArcelorMittal Maizières, France
B. Stewart, A. Hunt - Materials Processing Institute, United Kingdom
K. Schulz - Imerys, Germany

11:40 [cc_021] High alloyed grade developments on pilot caster: combination between measurements and calculation

T. Brulot, M. Cornille, J. Lehmann, G. Stechmann - ArcelorMittal Research Maizières-lès-Metz, France
H. Yin, T. Javadi - ArcelorMittal Research East Chicago, USA

12:00 [cc_154] Proil™ a value innovation for open casting billet producers

A. Giacobbe - RHI Magnesita, Brescia, Italy
C. Eglsaer, G. Krumpel - RHI Magnesita, Vienna, Austria
M. Alloni, R. Carli - Prosimet, Filago, Italy
C. Mapelli, S. Barella, D. Mombelli, A. Gruttadauria - Politecnico di Milano, Italy

MOLD FLUX - MATERIALS

Chairperson: IRMTRAUD MARSCHALL

12:20 [cc_010] Higher than one. Triggering crystallization in mold flux slag

R. Carli, M. Alloni, G. Martino, O. Wunderlich - Prosimet, Filago, Italy

12:40 [cc_013] Structure and its effect on viscosity of fluorine-free mold flux: DIGITAL Substituting CaF₂ with B₂O₃ and Na₂O

T-m. Yeo, J-W. Cho - Pohang University of Science and Technology, Korea
M. Alloni, S. Casagrande, R. Carli - Prosimet, Italy

13:00 LUNCH

NICOLAUS 1 ROOM

WEDNESDAY, 20 OCTOBER 2021

MICROSTRUCTURAL TRANSFORMATION & SURFACE DEFECTS I

Chairperson: MARINA GONTIJO

14:00 [CC_109] **KEYNOTE - Quantification of critical parameters for prediction of surface crack formation in continuous casting**

DIGITAL
R. Krobath, C. Bernhard - Montanuniversitaet Leoben, Austria

14:30 [CC_042] **Temperature control in secondary cooling to reduce cracking susceptibility in HSLA steels at Tata Steel continuous caster in Kalinganagar, India**

B. Santillana - Tata Steel, IJmuiden, The Netherlands
K. Malla, P. Palai - Tata Steel Limited, Kalinganagar Industrial complex, India
R. Ranjan, M.K. Singh, S. Pathak - Tata Steel Limited, Jamshedpur, India

14:50 [CC_127] **Application of the IDS solidification and microstructure tool for quality prediction in continuous casting of steel with novel phenomenological quality criteria**

DIGITAL
S. Louhenkilpi - University of Oulu, Finland and Aalto University, Finland
J. Miettinen, V-V. Visuri, T. Fabritius - University of Oulu, Finland

15:10 [CC_084] **Reducing corner cracks with a new strategy for secondary cooling**

P. Pennerstorfer, A. Mittermair - Primetals Technologies Austria GmbH, Austria
S-H. Lim, W-J. Cho - Hyundai Steel Company, Korea

15:30 [CC_192] **Cracks in continuous casting: the roadmap for future research proposed by the VALCRA RFCS project**

A. Gottj, E. D'Amanzo, M. De Santis - Rina Consulting- Centro Sviluppo Materiali, Italy
K. Marx - VDEh-Betriebsforschungsinstitut, Germany
P. Ramirez Lopez - Swerim AB, Luleå, Sweden
S. Higson - Materials Processing Institute, United Kingdom
N. Egido, G. Alvarez de Toledo - Sidenor I+D, Basauri, Spain

15:50 [CC_189] **Influence of the continuous casting tertiary cooling and steel compositions on the transformation cracking of billets for microalloyed steel grades**

DIGITAL
N. Egido, A. Soto, G. Alvarez de Toledo - Sidenor I+D, Basauri, Spain

16:10 COFFEE BREAK

NICOLAUS 1 ROOM

WEDNESDAY, 20 OCTOBER 2021

NUMERICAL SIMULATION I

Chairperson: JEAN-FRANCOIS DOMGIN

16:30 [CC_134] KEYNOTE - A comprehensive slice model for continuous casting of steel

B. Šarler, B. Mavrič - University of Ljubljana, Slovenia and Institute of Metals and Technology, Ljubljana, Slovenia
T. Dobravec - University of Ljubljana, Slovenia
R. Vertnik - University of Ljubljana, Slovenia and Štore-Steel, Slovenia

17:00 [CC_037] Mathematical simulation of straightening in the continuous slab casting

DIGITAL

R. Fernandes Reis, T. Magno Fuzessy de Melo, L.J. Silva De Oliveira - USIMINAS, Ipatinga, Brazil
R. Parreiras Tavares - Federal University of Minas Gerais, Brazil

17:20 [CC_135] Identification of cracking issues and process improvements through plant monitoring and numerical modelling of secondary cooling during continuous casting of HSLA steels

R.M. Pineda Huitron, P.E. Ramirez Lopez, P.N. Jalali- Swerim AB, Luleå, Sweden
E. Vuorinen - Luleå University of Technology, Sweden
M.E. Kärkkäinen - SSAB Europe, Raabe, Finland

17:40 [CC_043] Minimising steel intermix in CC slabs via an online tool CFD-modelling based

M. De Santis, N. De Santis, D. Fera, R. Tonelli - Rina Consulting- Centro Sviluppo Materiali, Italy
S. Oktay, A. Oran - Colakoglu Metalurji, Dilovası, Kocaeli, Turkey

18:00 [CC_152] Simulation of segregation in the continuous casting of an alloy steel

B. Erzar, E. Baganus-Colle - ABS Centre Métallurgique (ACM), France
S. Marzio, M. Truant - Acciaierie Bertoli Safau (ABS), Italy

18:20 [CC_052] Bubbly mold flow in continuous slab casting: challenges for numerical flow simulations

M. Javurek - Johannes Kepler University Linz, Austria
R. Wincor - voestalpine, Austria

18:40 [CC_024] Proposal for introduction of dendrite breaking of steel by molten steel flow to cellular automaton method

DIGITAL

S. Morita, Y. Miki, K. Toishi - JFE Steel Corporation, Japan

19:00 END OF THE FIRST DAY

NICOLAUS 2 ROOM

WEDNESDAY, 20 OCTOBER 2021

INDUSTRY 4.0 I

Chairperson: OLIVER LANG

11:20 [cc_047] The role of process control and sensing in continuous casting according to the VALCRA RFCS project

K. Marx, T. Hauck - VDEh-Betriebsforschungsinstitut, Germany

11:40 [cc_083] Software-as-a-Service in the metals industry – challenges, requirements and opportunities

C. Brugger, R. Leitner, D. Fuchshuber, B. Jozic - Primetals Technologies Linz Austria

12:00 [cc_007] Up to 60 % surface defect and downgrading reduction - ArcelorMittal Eisenhüttenstadt lifts quality control to the next level through application of AI

J. Daldrop, F-F. Henrich, O. Jannasch - Smart Steel Technologies, Germany

N. Decker, J. Gellert - ArcelorMittal Eisenhüttenstadt, Germany

12:20 [cc_002] Digital dynamic managed services – Achieving the next level of performance in caster maintenance

D. Jeffrey, C. Häusler, R. Buttgereit - SMS group, Germany

G. Pravisani - SMS group, Italy

12:40 [cc_115] Smart robotics applied to Ladle sliding gate maintenance to improve operator safety

G. Maccani - Polytec, USA

D. Oteri, M. Vezzola - BM Group Polytec, Italy

13:00 LUNCH

NICOLAUS 2 ROOM

WEDNESDAY, 20 OCTOBER 2021

MOLD FLUX - CHARACTERIZATION

Chairperson: MAÏTÉ CORNILLE

14:00 [CC_111] **KEYNOTE - Controlling mold heat transfer by metallic particles dispersed inslag film: design principle of innovative mold fluxes for high Al-containing steels**

S-H. Hyun, J-W. Cho - Pohang University of Science and Technology, Pohang, Korea

14:30 [CC_017] **Significance of an inclined plane test for mould slag assessment**

I. Marschall - K1-MET GmbH, Austria

H. Harmuth, V. Kircher - Montanuniversität Leoben, Austria

14:50 [CC_008] **Break temperature measurement and an automated evaluation method**

N. Kölbl - Montanuniversitaet Leoben, Austria

15:10 [CC_039] **Neuromelt model for estimating mold flux melting behaviour**

M. Vargas Hernandez, C. Mapelli - Politecnico di Milano, Italy

J. Cho - Pohang University of Science and Technology, South Korea

N. Kölbl, I. Marschall - Montanuniversitat, Leoben, Austria

M. Alloni, R. Carli - Prosimet, Italy

MOLD LEVEL BEHAVIOUR AND CONTROL

Chairperson: STEFANO MIANI

15:30 [CC_132] **Investigation of pressure distribution during flow regulation with a stopper and associated mould level stability in a continuous casting simulation based on liquid metal**

J. Eck - Swerim AB, Luleå, Sweden

P.E. Ramirez - Swerim AB, Luleå, Sweden

M. Cervantes - KTH Kungliga Tekniska Högskolan, Sweden

15:50 [CC_004] **Measuring and understanding flow and meniscus profiles in the Direct Sheet Plant of Tata Steel IJmuiden**

S. Senge, J. Kromhout, C. Dwyer, T. Spierings, R. Kalter, M. Wiegman, S. Meijer,

J. Van 't Hul, F. Charruault - Tata Steel in Europe, IJmuiden, The Netherlands

16:10 COFFEE BREAK

NICOLAUS 2 ROOM

WEDNESDAY, 20 OCTOBER 2021

INCLUSIONS MODELLING

Chairperson: PAVEL ERNESTO RAMIREZ LOPEZ

16:30 [CC_086] **KEYNOTE - Understanding slag-steel-inclusion multiphase reactions in ladle and tundish digital for improvement of steel cleanliness during continuous casting process: Experimental approach and computational simulations**

DIGITAL
T. Kim - Hanyang University, Korea
J. Shin - Hyundai Steel Company, Korea
L. Holappa - Aalto University, Finland
P. Jönsson - KTH Royal Institute of Technology, Sweden
J. Park - Hanyang University, Korea and KTH Royal Institute of Technology, Sweden

17:00 [CC_123] **A model for inclusion precipitation kinetics during solidification of steel**

DIGITAL
Q. Shu, V-V. Visuri, T. Alatarvas, T. Fabritius - University of Oulu, Finland

17:20 [CC_069] **Alumina inclusion defect distribution in continuous cast steel slabs**

DIGITAL
S-M. Cho, B.G. Thomas - Colorado School of Mines, USA
J-Y. Hwang, J-G. Bang, I-S. Bae - POSCO, Korea

FLUID FLUX CONTROL – STOPPER, SEN, CLOGGING

Chairperson: JOHAN RICHAUD

17:40 [CC_033] **Microstructural examination of post-mortem stopper noses for continuous casting of Al-killed steel**

Q. Carre, C. Ganser, J.-P. Lebacqz, L. Loison - ArcelorMittal Research, Maizières-lès-Metz, France

18:00 [CC_180] **Effect of aluminum to calcium ratio of liquid steel on clogging and erosion of special refractories in continuous casting**

E. Moghadas, G. Salimi, M. Shafei Dehnavi - Mobarake Steel Co., Iran

18:20 [CC_060] **Mechanism of nozzle clogging during continuous casting of Ti added ULC steel – initial formation and growth**

DIGITAL
J-H. Lee - Pohang University of Science and Technology, Korea and POSCO, Korea
M-H. Kang, J. Kim, S-K. Kim - POSCO, Korea
M-S. Kim - Korean Institute of Industrial Technology, Korea
Y-B. Kang - Pohang University of Science and Technology, Korea

19:00 END OF THE FIRST DAY

NICOLAUS 1 ROOM

THURSDAY, 21 OCTOBER 2021

PLENARY LECTURE

08:20 [CC_186] State of the art in computational modeling of defect formation in continuous casting of steel

DIGITAL

B.G. Thomas - Colorado School of Mines, USA

MICROSTRUCTURAL TRANSFORMATION & SURFACE DEFECTS II

Chairperson: CHRISTIAN BERNHARD

08:50 [CC_144] KEYNOTE - Approaches for process optimization in continuous casting of slabs at Hüttenwerke Krupp Mannesmann

T. Bolender, G. Kemper, B. Rabe, M. Schürmann - Hüttenwerke Krupp Mannesmann GmbH, Germany

C. Grahe, D. Senk - RWTH Aachen University, Germany

09:20 [CC_011] The influence of strain rate on the hot ductility of a continuously cast Ti-Nb microalloyed steel

M. Gontijo - K1-MET GmbH, Austria and IMAT, Graz University of Technology, Austria

C. Hoflehner, C. Sommitsch – IMAT, Graz University of Technology, Austria

S. Ilie, J. Six - voestalpine Stahl Linz GmbH, Linz, Austria

09:40 [CC_096] Microalloying elements and solidification condition as influencing factors on the second ductility minimum

C. Fix, S-M. Elixmann, L. Bormann, D.G. Senk - RWTH Aachen University, Germany

10:00 [CC_034] Prediction of surface defects in structural steels using a real time coupled thermal-mechanical model

J. Stefina, M. Brezina, T. Mauder, L. Klimes, T. Navrat, J. Petruska, J. Kovar - Brno University of Technology, Czech Republic

10:20 [CC_142] Effect of super-large austenite grains on hot ductility behavior of a low-carbon steel

DIGITAL

H. Kim, Y-U. Heo, J-S. Lee, C.H. Yim - GIFT Postech, Korea

G.S. Jung, S.H. Kwon - POSCO, Korea

10:40 [CC_088] Research on the application of secondary chamfering technology in continuous casting slab

DIGITAL

F. Yu - Ansteel Beijing Research Institute Co. Ltd., Beijing, China and Metal Material for Marine Equipment and Application, Anshan, China

H. Yu, Y. Ma, L. Wang, Y. Huang, Y. Tian - Angang Steel Co. Ltd., Yingkou, China

M. Xu, D. Li - Metal Material for Marine Equipment and Application, Anshan, China

M. Wang - Central Iron and Steel Research Institute, Beijing, China

11:00 COFFEE BREAK

NICOLAUS 1 ROOM

THURSDAY, 21 OCTOBER 2021

SOFT REDUCTION AND CENTER SEGREGATION

Chairperson: CARLO MAPELLI

11:20 [cc_082] Hitting the spot every time: Single Roll Dynagap (SRD) Segment for an efficient reduction of center segregation and porosities

P. Pennerstorfer, A. Jungbauer - Primetals Technologies Austria GmbH, Linz, Austria

11:40 [cc_137] Dynamic mechanical soft reduction for quality improvement

P. Armenante, A. Miconi, P. Pardela, A. Trisciuzzi - Danieli & C. Officine Meccaniche, Italy

12:00 [cc_098] Implementation of thermal taper and static soft reduction on the Whyalla combination Caster at Liberty Steel Australia for slab quality improvements

J. Peltonen, J. Varcin, K. Murphy - Liberty Steel Australia, Whyalla, South Australia
AWA. Smith, A. Bell, P. Kitson, A. Williams - Materials Processing Institute, Middlesbrough, United Kingdom

12:20 [cc_148] Danieli's latest dynamic soft-reduction technology for continuous bloom casting at Baoshan Iron and Steel Co., Ltd, Shanghai P.R. of China

P. Armenante, P. Pardela, D. Zenarolla - Danieli Officine Meccaniche, Italy
R. Dose, V. Daneluzzi, L. Busolini - Danieli Automation, Italy
Q. Meng - Baoshan Iron & Steel Co., Ltd., China

ELECTROMAGNETIC DEVICES

Chairperson: HONGLIANG YANG

12:40 [cc_190] Application of Linear Electromagnetic Stirrer (LES) to decrease the central macrosegregation affecting the billets

C. Mapelli, S. Barella, D. Mombelli, A. Gruttadauria, T. Balaji - Politecnico di Milano, Italy
L. Angelini, C. Di Cecca, P. Frittella, F. Guerra - Feralpi Siderurgica, Italy
S. De Monte, C. Persi - Ergolines, Italy

13:00 [cc_107] Numeric simulation of electromagnetic linear stirring for continuously cast steel slabs

M. Barna, M. Javurek - Johannes Kepler University Linz, Austria
P. Wimmer - Primetals Technologies Austria GmbH, Austria

13:20 LUNCH

NICOLAUS 1 ROOM

THURSDAY, 21 OCTOBER 2021

PLENARY LECTURE

14:00 [cc_199] Control of the CC structure and related material's properties

DIGITAL D. Senk, C. Fix, S. Kurenbach, L. Borrmann, S.-M. Elixmann - RWTH Aachen University, Germany

BILLET AND BLOOM CASTING – OPERATIONAL RESULTS

Chairperson: MARCO ALLONI

14:30 [cc_057] KEYNOTE - Powder dosing with mould temperature feedback control in continuous casting of stainless steel for high quality billet surfaces

C. Scarabelli, D. Olivero, F. Bego - Cogne Acciai Speciali, Italy
I. Mazza, S. Spagnul, G. Schiavon - Ergolines Lab, Italy

15:00 [cc_157] Activity of development of continuous casting of billets in Feralpi Siderurgica since solidification modelling approach till revamping for 150 mm size casting

L. Angelini, M. Fusato, G. Foglio, A. Landini, S. Leali, P. Frittella, C. Di Cecca, R. Boschetti, A. Milan, B. Cinquegrana, G. Tsymokh, G. Gentilini - Feralpi Siderurgica, Italy
R. Tonelli - Rina CSM, Italy

15:20 [cc_041] Radio-frequency sensor for flux powder thickness measurement in continuous caster for long products

F. Macci, F. Menchetti - Rina Consulting - Centro Sviluppo Materiali, Italy
L. Cestari - Danieli Automation, Italy

15:40 [cc_068] Textured mould for improved casting performance

A. Thiele, D. Kolbeck - KME Special Products GmbH & Co. KG, Germany

16:00 [cc_136] High-speed casting: its effect on billet and bloom-quality

D. Zenarolla, A. Trisciuzzi, M.M. Motta - Danieli & C. Off. Meccaniche, Italy

16:20 [cc_183] Development of Intermix Practice at Vallourec's continuous casting

DIGITAL M. Modesto, O. Ferreira, L.C. Germano, G. Gomes, T. Oliveira, L. Chesseret - Vallourec Soluções Tubulares, Brasil
C.A. da Silva - Federal University of Ouro Preto, Brazil
C. Delvaux - Vallourec, France

16:40 COFFEE BREAK

NICOLAUS 1 ROOM

THURSDAY, 21 OCTOBER 2021

BILLET AND BLOOM CASTING – SURFACE & INTERNAL QUALITY

Chairperson: ANDREA CARLO LUIGI GIACOBBE

17:00 [cc_079] Single Roll DynGap (SRD) Segments for optimum internal quality of billets

N. Kapaj, D. Burzic, P. Pennerstorfer, M. Riedler, A. Jungbauer - Primetals Technologies Austria GmbH, Linz, Austria

17:20 [cc_050] Technologies in billets and bloom continuous casters supplied by SMS Concast in recent projects in China

P. Nolli, D. Kabosch, M. Meier, M. Abram, P. Rivetti, Q. Chen - SMS Concast AG, Switzerland

17:40 [cc_102] Design features of bloom casters for a high end product mix and achieved quality results

S. Baf, J. Kohl, O. Novokshonov, H. Holzgruber - INTECO melting & casting technologies GmbH, Austria

18:00 [cc_201] Defects on round sized blooms and billets: How to get rid of?!

D. Eckhardt, M. Alloni, O. Wunderlich - Prosimet, Italy

18:20 [cc_182] Optimization of casting conditions of 406mm round billets to improve DIGITAL pipe quality

M. Modesto, D. Rezende, R. Santos, M. Sacramento, L. Dutra, C. Nery Abreu - Vallourec Soluções Tubulares, Brazil

18:40 END OF THE SECOND DAY

19:15 SOCIAL EVENT

NICOLAUS 2 ROOM

THURSDAY, 21 OCTOBER 2021

PLENARY LECTURE BY BRIAN THOMAS (NICOLAUS ROOM)

INDUSTRY 4.0 II

Chairperson: KAREL GRYC

08:50 [cc_175] KEYNOTE - Smart production with new measure devices for continuous casting

O. Lang, T. Blin, A. Mittermair, D. Ott, C. Stummer, K. Winkler, A. Wurm - Primetals Technologies Austria

09:20 [cc_090] Automated mold flux feeders for Industry 4.0 application

M. Zinni – Imerys Steelcasting, France

09:40 [cc_028] Smart ladle slide gate's refractory plates evaluation (i-gVard)

C. Picard, E. Martin - Vesuvius, France

A. Culin - Aperam Stainless, Belgium

M. Gassmann - Vesuvius Group SA, Belgium

10:00 [cc_053] Virtual experimentation in continuous casting towards online control

E. Hepp, S. Koldorf - MAGMA GmbH, Germany

10:20 [cc_125] Automated 3D surface inspection system - unveiling the invisible

T. Köpsel - IMS Messsysteme GmbH, Germany

10:40 [cc_164] Sapotech Reveal Platform – Machine vision based solution platform for digitalization of metallurgical processes

S. Kaukonen, H. Suopajärvi, P. Parhi - Sapotech Oy, Oulu, Finland

11:00 COFFEE BREAK

NICOLAUS 2 ROOM

THURSDAY, 21 OCTOBER 2021

CONTROL SYSTEMS I

Chairperson: CHRISTIAN SCARABELLI

11:20 [cc_129] X-Pact® Width Control – Technology and experience report

G. Michelon - SMS group, Italy

L. Schaps, R. Wilmes, H. Beyer-Steinhauer - SMS group GmbH, Germany

11:40 [cc_140] Advanced cast product quality testing

L. Fischer, S. Six, T. Gusarova, S. Schulze - SMS group GmbH, Germany

R. J. van den Bogert, R. Frinking, A. A. Kamperman - Tata Steel, The Netherlands

12:00 [cc_108] The mold temperature mapping with Ultrasonic Contactless Technology is the key for the real time initial solidification process control tools

I. Mazza, S. Miani, G. Schiavon, S. Spagnul - Ergolines LAB, Padriciano, Italy

12:20 [cc_177] Advanced level control and mould flux feeding: Q-Level+ with DIGITAL double sensor in Danieli QSP-TSCS

G. Donati, L. Orsettig, C. Pezzutto - Danieli Automation, Italy

M. Fornasier - Danieli & C. Off. Meccaniche, Italy

M. Stepanek - Vuhz, Czech Republic

12:40 [cc_150] Simple, innovative FBG optical fiber installation in copper plates for continuous caster

E. Castiaux, G. Zuliani - EBDS Engineering Sprl, Belgium

J. Meseha - CSN Carl Schreiber GmbH, Germany

13:00 [cc_172] High temperature scanning technique for online mapping of defects during casting of duplex stainless-steel

S. Kesavan - Swerim AB, Sweden

A. Slagter, T. Avila - Luleå University of Technology (LTU), Sweden

P.E. Ramirez Lopez - Swerim AB, Sweden and Royal Institute of Technology (KTH), Sweden

C. Schmidt - Outokumpu Stainless AB, Sweden

13:20 LUNCH

NICOLAUS 2 ROOM

THURSDAY, 21 OCTOBER 2021

PLENARY LECTURE BY DIETER SENK (NICOLAUS ROOM)

COOLING TECHNOLOGIES I

Chairperson: KERSTEN MARX

- 14:30** [CC_121] **KEYNOTE - Investigations on primary cooling in CC mould through the use of modeling approach**
J-F. Domgin, S. Gauthier - ArcelorMittal Maizières R&D, France
- 15:00** [CC_040] **Secondary cooling: influence of process parameters and laboratory heat transfer measurements**
M. Javurek - Johannes Kepler University Linz, Austria
 A. Mittermair - Primetals Technologies Austria GmbH, Austria
- 15:20** [CC_099] **Intensification of the secondary cooling by the presence of the oxide layer on the steel slab surface**
 M. Chabicovsky, O. Resl, P. Kotrbacek, M. Raudensky - Brno University of Technology, Czech Republic
- 15:40** [CC_012] **Energy Efficiency in Secondary Cooling – new generation of hydraulic nozzles with increased water turndown ratio and cooling efficiency for slab casting processes**
 J. Frick, R. Wolff - Lechler GmbH, Germany
 R. Conte, A. Carboni - Danieli & C. Officine Meccaniche, Italy
- 16:00** [CC_094] **Improvement of secondary cooling strategies to optimize strand quality and operative aspects through thermo-mechanical modeling**
G. Poltarak, C. Cicutti - Tenaris, Argentina
- 16:20** [CC_055] **Investigation of spray cooling uniformity and intensity during continuous casting of steel**
 H. Ma, A. Silaen, C. Zhou - Purdue University Northwest, Hammond, USA
 R. Liu - ArcelorMittal Global Research and Development, East Chicago, USA
- 16:40** **COFFEE BREAK**

NICOLAUS 2 ROOM

THURSDAY, 21 OCTOBER 2021

COOLING TECHNOLOGIES II

Chairperson: STEFANO MIANI

17:00 [CC_058] **Optimisation of strip casting by experimental model investigations**
K. Marx - VDEh-Betriebsforschungsinstitut, Germany

17:20 [CC_120] **Heat transfer coefficient during spray cooling of very hot surfaces by flat nozzles**
H. Bellerova, T. Luks, M. Raudensky, O. Resl - Brno University of Technology, Czech Republic

17:40 [CC_019] **Effects of cooling methods and cooling conditions on behavior of thermal distortion and stress generation of steel blooms cast continuously on reverse transformation treatment**
DIGITAL K. Isobe - National Institute of Technology (KOSEN), Japan

CONTROL SYSTEMS II

Chairperson: STEFANO MIANI

18:00 [CC_080] **Digital Twin for continuous casters – the playground for metallurgists and process engineers**
R. Leitner, D. Fuchshuber, C. Brugger, P. Pennerstorfer - Primetals Technologies, Linz, Austria

18:20 [CC_105] **Dynamic SuperHeat determination in a continuous casting machine – process, practice and benefits**
P. Hughes-Narborough, P. White, G. Humphrey - Heraeus Electro-Nite (UK) Ltd, United Kingdom

18:40 END OF THE SECOND DAY

19:15 SOCIAL EVENT

CIGNO ROOM (FLOOR+2)

THURSDAY, 21 OCTOBER 2021

NUMERICAL SIMULATION II

Chairperson: MICHELE DE SANTIS

09:20 [cc_092] Investigating the flow structure in two model slab casting moulds using contactless inductive flow tomography

M. Ratajczak, T. Wondrak, I. Glavinic, K. Timmel, F. Stefani, S. Eckert - Helmholtz-Zentrum Dresden - Rossendorf, Germany

09:40 [cc_118] Correlation between lab-scale wedge mould castings and slab samples, a method for new alloy development

B. Santillana, K. Hechu - Tata Steel, IJmuiden, The Netherlands
A. SenGupta - Tata Steel, Jamshedpur, India
M. Auinger - University of Warwick, United Kingdom

10:00 [cc_001] Investigations on hot tearing in a continuous slab caster: Numerical DIGITAL modelling combined with analysis of plant results

M. Bernhard, C. Bernhard - Montanuniversitaet Leoben, Austria
G. Santos - K1-MET GmbH, Linz, Austria and voestalpine Stahl Linz GmbH, Austria
S. Ilie - voestalpine Stahl GmbH, Linz, Austria
L. Preuler - K1-MET GmbH, Linz, Austria and Primetals Technologies Austria GmbH, Austria

10:20 [cc_141] Digital twin for in-mould performance simulations during continuous casting

P.E. Ramirez Lopez - Swerim AB, Luleå, Sweden and KTH Royal Institute of Technology, Sweden
P.N. Jalali, H. Yang, S. Kesavan - Swerim AB, Luleå, Sweden

10:40 [cc_023] Effect of static magnetic field on solidification microstructure of Sn-Zn DIGITAL alloy

T. Odagaki, N. Aramaki, Y. Miki - JFE Steel Corporation, Japan

11:00 COFFEE BREAK

CIGNO ROOM (FLOOR+2)

THURSDAY, 21 OCTOBER 2021

NUMERICAL SIMULATION III

Chairperson: BOZIDAR SARLER

11:20 [cc_048] Simulation and validation of the mechanism responsible for the right flank of the second ductility minimum

P. Estermann, E. Kozeschnik - TU Wien, Austria

J. Six, S. Ilie - voestalpine Stahl, Austria

11:40 [cc_045] A comparison of symmetric and asymmetric approaches to predicting hot ductility for steels using deep neural network

DIGITAL

S-H. Kwon - POSCO Research Laboratories, South Korea

D-G. Hong, C-H. Yim - Postech, South Korea

12:00 [cc_072] Time dependence hardness evolution related to the low temperature embrittlement of duplex stainless steels assisted by machine learning and key experiments

DIGITAL

L. Lai - KTH Royal Institute of Technology, Sweden and Helmholtz-Zentrum Dresden-Rossendorf, Germany

G. Feng - KTH Royal Institute of Technology, Stockholm, Sweden and Outokumpu Stainless AB, Avesta, Sweden

S. Sukenaga, H. Shibata - Tohoku University, Sendai, Japan

R. Rodríguez, W. Mu - KTH Royal Institute of Technology, Stockholm, Sweden

12:20 [cc_070] Electromagnetic stirring simulation with THERCAST®

G. Puaux - TRANSVALOR, France

13:00 LUNCH

NICOLAUS 1 ROOM

FRIDAY, 22 OCTOBER 2021

THIN SLAB CASTER

Chairperson: KAREL GRYC

09:00 [cc_097] KEYNOTE - Reduction of transverse corner cracks in Tata Steel's Direct Sheet Plant in IJmuiden

R. Kalter, J.A. Kromhout, M.B. Santillana, A.J.C. Burghardt, J. Link, C. Toeniges, E. Gillebaart, L. Koomen, G.J.C.H. Goessens, J. van 't Hul, S. Meijer - Tata Steel, Ijmuiden, The Netherlands

09:30 [cc_165] Productivity and performance enhancement at OMK for X70 arctic via thin-slab rolling fed by EAF

R. Sellan, M. Fornasier, B. Vucinic, A. Dapelo - Danieli Officine Meccaniche, Italy
O. Rott - Danieli Germany GmbH, Germany
V. Kislica, A. Muntin - OMK-JSC Vyksa Steel Works, Russia

09:50 [cc_085] Latest advancements in ESP casting technology

J. Watzinger, I. Watzinger - Primetals Technologies Austria GmbH, Austria

10:10 [cc_153] CFD based optimization of thin slab caster equipped with an EMBr

J. Richaud - Vesuvius Europe, France
A. Chakraborty - Vesuvius India Ltd, India
A. Sangkhawasi - Vesuvius Thailand Co. Ltd., Thailand
W. Suwannasorn, A. Boonhai - G Steel Public Limited Company, Thailand

10:30 [cc_089] Danieli latest thin slab casting technology for the QSP Complex in Hoa Phat Dung Quat

M. Fornasier, G. Paulon, A. Colombini, A. Sponga, L. Ziber - Danieli & C. Officine Meccaniche, Italy
R. Dose - Danieli Automation, Italy
P. Ngoc Tu - Hoa Phat, Vietnam

10:50 COFFEE BREAK

NICOLAUS 1 ROOM

FRIDAY, 22 OCTOBER 2021

TUNDISH – NEW DEVELOPMENTS

Chairperson: GERNOT HACKL

11:10 [cc_139] Tundish & mold flow optimization for packaging steel grades at thyssenkrupp steel Bruckhausen for quality improvement by Vesuvius

S. Karrasch, H. Schnitzer - thyssenkrupp Steel, Germany

J. Richaud - Vesuvius, France

M. Kreierhoff, E. Häder, T. Hasenberg - Vesuvius, Germany

C. Warmers - Germany

11:30 [cc_087] Improvement of steel cleanliness with electromagnetic stirring in tundish

H. Yang, L. Teng - ABB AB/Metallurgy Products, Sweden

W. Wan - Zenith Steel Co. Ltd., China

M. Zielinska - ABB Corporate Technology Center, Poland

A-Y. Zhong - ABB China Ltd., China

11:50 [cc_188] Reduction in slab cast downgrades in ULC grade by reducing variations in stopper position and by improving mould level fluctuations using customized refractory

K. Ravi Shekar, A. Kumar, A. Sakar, V. Surayanana - JSW Vijayanagar, India

R. Mukhekar, M. Sabhapathy, J. Richaud - Vesuvius, France

12:10 [cc_112] Tundish impact POT optimization through mathematical and physical DIGITAL modeling

A. Dolabella Resende - RHI Magnesita, Brazil

G. Lukesch, G. Hackl, D. Meurer - RHI Magnesita, Austria

CONTROL SYSTEM III

Chairperson: CHRISTIAN BRUGGER

12:30 [cc_200] Laser and ultrasounds use in the molds dimensional control

F. Fossi, A. Porri - Sider Sistem, Italy

12:50 [cc_160] Surface quality monitoring – Important piece of the puzzle to control and improve the quality of cast products

H. Suopajarvi, S. Kaukonen - Sapotech Oy, Finland

D. Mier Vasallo - Sidenor Investigación y Desarrollo S.A., Spain

J. Larsson - Outokumpu Stainless AB, Sweden

13:10 CLOSING REMARKS

13:20 END OF THE CONFERENCE

NICOLAUS 2 ROOM

FRIDAY, 22 OCTOBER 2021

PLANT ENGINEERING I

Chairperson: **BAHRAM ZAMANI**

09:00 [CC_156] KEYNOTE - Technology and controls improvements on the continuous casting of Acciaierie di Calvisano for improvements on solidification process and new steel grades

L. Angelini, P. Frittella, G. Tsymokh, C. Di Cecca, B. Cinquegrana, A. Milan, F. Fredi - Feralpi Siderurgica, Italy
 M. Bersani, C. Senes, F. Guerra, G. Miglietta, S. Conte, V. Duro, A. Zurru - Acciaierie di Calvisano, Italy
 C. Mapelli, S. Barella - Politecnico di Milano, Italy
 L. Calligarich, G. Galeazzi, S. Maurina - Visiorobotis, Italy
 S. De Monte, C. Persi, S. Spagnul - Ergolines Lab, Italy
 M. Saba - Automazioni Industriali Capitanio, Italy
 G. Flor, B. Palm - VDEh-Betriebsforschungsinstitut GmbH, Germany

09:30 [CC_130] The intelligent ultra-wide caster for high-quality slabs at Rizhao Shandong

Q. Zheng, D. Zhao - Shandong Iron & Steel Group Rizhao Co., China
 J. Yuan - SMS group, China
 P. Heidemann, I. Olgemöller, J. Wans, R. Wilmes, L. Fischer - SMS group, Germany

09:50 [CC_005] Implementation of state of the art technologies, a “Second life” for DIGITAL existing continuous casting plants

U. Zanelli - Sarralle, Spain

10:10 [CC_138] Largest beam blank casting: Danieli technology and experience

J. Richaud - Vesuvius France
 P. Pardela, P. Armenante, M. Fornasier, A. Sgro, A. Trisciuzzi - Danieli & C. Officine Meccaniche, Italy

10:30 [CC_101] Segment casting: a new technology enters the market – an overview on plant design and first results

S. Baf, O. Novokshonov, H. Holzgruber, A. Scheriau - INTECO melting & casting technologies GmbH, Austria
 K. von Eynatten - Eycon-steel plant technology

10:50 COFFEE BREAK

NICOLAUS 2 ROOM

FRIDAY, 22 OCTOBER 2021

PLANT ENGINEERING II

Chairperson: COSMO DI CECCA

11:10 [cc_173] Modernization of ArcelorMittal Tubarão continuous slab caster machine #2

M. Fornasier, A. Benedetti - Danieli & C. Off. Meccaniche, Italy

D. Da Rós Ruy, A. Dettogne do Nascimento, C.A. Silva, A.B. Almeida - ArcelorMittal Tubarão, Brasil

11:30 [cc_054] High throughput casting technology - challenges and solutions

F. Seuffert, C. Froehling, J. Mueller, B. Kintscher - SMS group, Düsseldorf, Germany

11:50 [cc_104] Investigation on corrosion of continuous casting mold coatings

DIGITAL A. Vopneruk - Joint Venture Mishima-Mashprom LLC, Yekaterinburg, Russia and Ural Federal University, Yekaterinburg, Russia

A. Kotelnikov - Joint Venture Mishima-Mashprom LLC, Yekaterinburg, Russia

A. Dagman - Novolipetsk Steel PJSC, Lipetsk, Russia

M. Karabanalov - Ural Federal University, Yekaterinburg, Russia

K. Yamamoto - Mishima Kosan Co. Ltd, Kitakyushu, Japan

12:10 [cc_181] The successful casting machine ramp up at Vallourec - Production and quality results

DIGITAL M. Modesto, S. Houel, D. Rezende, O. Ferreira, S. Bastos, T. Oliveira, L. Birkhauser - Vallourec Soluções Tubulares, Brazil

M. Hodson - SMS Concast, Switzerland

12:30 [cc_202] Customization of the ladle nozzle sanding method in the steel mill

DIGITAL A. Lavinias, O. Pereira, C.A.G. Valadares - CARBOOX Resende Química Ind.Com Ltda, Resende, RJ, Brasil

R. Veroneze - CARBOOX, Resende, RJ, Brasil

J. Altenir Lopes - UERJ, Mestrando em materiais - UNIFOA, Projetista de Máquinas e Equipamentos, J.A. Lopes Engenharia & Projetos ME, Volta Redonda, RJ, Brasil

13:10 CLOSING REMARKS (ROOM NICOLAUS)

13:20 END OF THE CONFERENCE

POSTERS

- [CC_071] **Microstructure evolution in tool steels: a fundamental study combining statistical modelling in-situ thermal analysis**
DIGITAL
 J. Chen - KTH Royal Institute of Technology, Stockholm, Sweden and Forschungszentrum Jülich GmbH, Jülich, Germany
 O. Rova, S. Guo, W. Mu - KTH Royal Institute of Technology, Stockholm, Sweden
- [CC_106] **Phase field & Monte Carlo Potts simulation of grain growth and morphology of vertically upwards cast oxygen free copper**
R.I. Strachan - University of Dundee, United Kingdom and Rautomead Ltd, Dundee, United Kingdom
 T.D.A. Jones, D.M. Mackie, J.B. Vorstius - University of Dundee, United Kingdom
 M. Cooper, B. Frame - Rautomead Ltd, Dundee, United Kingdom
- [CC_114] **Digital technologies and robotics for CCM**
 G. Maccani - Polytec, USA
 M. Vezzola, D. Oteri - BM Group Polytec, Italy
- [CC_126] **The effect of surface conditions on oxide scale formation during continuous casting of HSLA steels**
R.M. Pineda Huitron, P.E. Ramirez Lopez, P.N. Jalali - Swerim AB, Luleå, Sweden
 E. Vuorinen, L. Pelcastre - Luleå University of Technology, Sweden
 M.E. Kärkkäinen, SSAB Europe, Raabe, Finland
- [CC_131] **X-Pact® Level Control – Performance module for quality improvement**
G. Michelon - SMS group, Italy
 L. Schaps, R. Wilmes - SMS group GmbH, Germany

NOTE OF THE PROGRAMME

Possible changes to the programme will be communicated during the Conference.

TIMETABLE

TUESDAY, 19 OCTOBER 2021

17:00 - 18:30	REGISTRATION OF ATTENDEES
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WEDNESDAY, 20 OCTOBER 2021

08:00	REGISTRATION OF ATTENDEES	
	NICOLAUS 1 ROOM	
09:00	OPENING SESSION	
11:00	COFFEE BREAK & OPENING OF THE EXHIBITION	
	NICOLAUS 1 ROOM	NICOLAUS 2 ROOM
11:20	MOLD FLUX – APPLICATIONS	INDUSTRY 4.0 I
12:20	MOLD FLUX – MATERIALS	
13:00	LUNCH	
14:00	MICROSTRUCTURAL TRANSFORMATION & SURFACE DEFECTS I	MOLD FLUX – CHARACTERIZATION
15:30		MOLD LEVEL BEHAVIOUR AND CONTROL
16:10	COFFEE BREAK	
16:30	NUMERICAL SIMULATION I	INCLUSIONS MODELLING
17:40		FLUID FLUX CONTROL – STOPPER, SEN, CLOGGING
19:00	END OF THE FIRST DAY	

THURSDAY, 21 OCTOBER 2021

	NICOLAUS 1 ROOM		
08:20	PLENARY LECTURE BY BRIAN .G. THOMAS		
	NICOLAUS 1 ROOM	NICOLAUS 2 ROOM	CIGNO ROOM
08:50	MICROSTRUCTURAL TRANSFORMATION & SURFACE DEFECTS II	INDUSTRY 4.0 II	
09:20			NUMERICAL SIMULATION II
11:00	COFFEE BREAK		
11:20	SOFT REDUCTION AND CENTER SEGREGATION ELECTROMAGNETIC DEVICES	CONTROL SYSTEMS I	NUMERICAL SIMULATION III
12:40			
13:20	LUNCH		
	NICOLAUS 1 ROOM		
14:00	PLENARY LECTURE BY D. SENK		
	NICOLAUS 1 ROOM	NICOLAUS 2 ROOM	
14:30	BILLET AND BLOOM CASTING – OPERATIONAL RESULTS	COOLING TECHNOLOGIES I	
16:40	COFFEE BREAK		
17:00	BILLET AND BLOOM CASTING – SURFACE & INTERNAL QUALITY	COOLING TECHNOLOGIES II	
18:00		CONTROL SYSTEMS II	
18:40	END OF THE SECOND DAY		
19:15	SOCIAL EVENT		

FRIDAY, 22 OCTOBER 2021

	NICOLAUS 1 ROOM	NICOLAUS 2 ROOM
09:00	THIN SLAB CASTER	PLANT ENGINEERING I
10:50	COFFEE BREAK	
11:10	TUNDISH – NEW DEVELOPMENTS	PLANT ENGINEERING II
12:30	CONTROL SYSTEM III	
	NICOLAUS 1 ROOM	
13:10	CLOSING REMARKS	
13:20	END OF THE CONFERENCE	

GENERAL INFORMATION

CONFERENCE VENUE

The Conference will be held in Bari – Italy, at **Nicolaus Hotel**, in via C.A. Ciasca 27
Website: <https://www.thenicolaushotel.com/>

LANGUAGE

The official language of the Conference will be English.

PROCEEDINGS

The full text of the accepted papers will be published in the electronic proceedings and issued to attendees on arrival at the Conference. Certain papers may be considered for publication in the AIM journal *La Metallurgia Italiana* – International Journal of the Italian Association for Metallurgy, which is covered in the Science Citation indexed by Clarivate Analytics (formerly Thomson Reuters), and in Scopus by Elsevier B.V

ACCOMMODATION

An allotment of rooms has been reserved for participants of the ECCC Conference at Nicolaus Hotel, in via C.A. Ciasca 27.

For booking, click here: <https://www.thenicolaushotel.com/lp/mice-eccc/>

IMPORTANT INFORMATION

All participants must have and exhibit the valid COVID-19 green certificate (Green Pass) ([>>LINK](#)). It will be possible to carry out a rapid antigen test in the pharmacies near the conference center.

COVID-19 HEALTH AND SAFETY INFORMATION

AIM and Siderweb are working closely with the venue to ensure a safe and successful Conference. Closer to the event, we will provide registered attendees with the health and safety guidelines that must be strictly observed.

DO YOU WISH TO ATTEND BUT YOU CANNOT TRAVEL TO ITALY?

Join the conference digitally!

ATTENDEES WITH TRAVEL RESTRICTIONS

For speakers and attendees with travel restrictions, confirming that all the sessions will be in presence, we inform that they will also be livestreamed through a platform - that integrates zoom and that, after the Conference, recordings will be available, embedded in the platform, for a period of 7 days.

A warm up session will be organised on Friday 15 October to provide information about the platform and how to use it.

REGISTRATION INFORMATION

REGISTRATION FEES

FEES FOR DIGITAL PARTICIPATION ARE THE SAME AS ON-SITE ATTENDANCE FEES

AFTER SEPTEMBER 17, 2021

REGULAR REGISTRATION FEES	AIM MEMBER	NON MEMBER
DELEGATE (NON-PRESENTER)	€ 790,00	€ 900,00
EXHIBITOR / SPONSOR	€ 700,00	€ 810,00
SESSION CHAIRPERSON; COMMITTEE MEMBER	€ 580,00	€ 690,00

CONFERENCE REGISTRATION FEES INCLUDE

- Admittance to technical sessions and to the exhibition
- Conference electronic proceedings
- Social event on October 21 (not included in the student registration fee)
- Coffee breaks and Lunches

ALL ABOVE REGISTRATION FEES ARE REVENUE STAMP INCLUDED FOR NON-MEMBERS THE FEE INCLUDES AIM MEMBERSHIP FOR THE SECOND SEMESTER OF 2021 AND FOR THE YEAR 2022.

STUDENT REGISTRATION FEES *

STUDENT REGISTRATION FEES ARE VAT INCLUDED

REGULAR REGISTRATION FEE	AFTER SEPTEMBER 17, 2021	€ 430,00

Students will have to provide valid proof of student status.

The Social event on October 21, 2021 is not included in the student registration fee

* EITHER DELEGATE OR SPEAKER - Registration for speaker is due **by July 30, 2021**

PAYMENT AND REMITTANCE

- by bank transfer, to the order of Associazione Italiana di Metallurgia - AIM at "CREDITO EMILIANO SpA", Branch no. 052 Milano Sede - Via Andegari, 14 - 20121 Milano - Italy, account no. 010000480455 cod. ABI 03032- CAB 01600 - cin M IBAN: IT33M0303201600010000480455, swift code BACRIT22MIL
The transfer order must specify the name of the participant and the reference "ECCC".
A copy of the transfer order must be sent to AIM, together with the Registration Form.
- by credit card online (www.aimnet.it/eccc2020).

SPEAKERS REGISTRATION

Please be aware that only papers submitted on time and with presenting author regularly registered (registration fee paid) **before July 30, 2021** will be included in the final programme and published in the Conference proceedings. Registration forms will not be processed without payment. A maximum of two papers will be accepted for each author registered in time.

SPEAKERS CANCELLATION AND REFUND POLICY

A refund, less 20% deduction for administrative costs, will be issued for written cancellations received **before July 30, 2021**. For speakers who notify their cancellation **after July 30, 2021** or will not attend the Conference, a charge of 100% of the Conference fee will be withheld. Their papers will be published anyway in the proceedings and a copy of the proceedings will be sent after the event.

CANCELLATION AND REFUND POLICY

A refund, less 20% deduction for administrative costs, will be issued for written cancellations received **by September 17, 2021**. For attendees who notify their cancellation **after September 17, 2021** or will not attend the Conference, a charge of 100% of the Conference fee will be withheld and a copy of the proceedings will be sent after the event.

INSURANCE

The Organising Secretariat cannot assume any responsibility for personal accident, loss or damage to the private property of participants and accompanying persons, which may either occur during or arise from the Conference. Participants should therefore take whatever steps they consider necessary as regards insurance.

VISA APPLICATION FORM

If you need an official invitation please send your request to the Organising Secretariat best before September 10, 2021 complete with: • Family and First name • Mr/Mrs • birth date • passport number • arrival and departure dates • nationality • fax number of the Italian Embassy for your Country.

SOCIAL PROGRAMME

In order to give delegates the opportunity to meet informally and enjoy Bari's atmosphere, AIM organized a Conference dinner in the evening of October 21, 2021.

The Conference dinner will be held at Sala ZONNO - MOLO SAN NICOLA, 3 IN BARI.

Dress code: Please dress appropriately for conference and evening functions, business attire is recommended.



Please complete and return this form by September 17, 2021 to:

ASSOCIAZIONE ITALIANA DI METALLURGIA - via F. Turati 8 - 20121 Milano - Italy
phone: +39 0276021132 or +39 0276397770
e-mail: aim@aimnet.it - website: www.aimnet.it

CONFERENCE REGISTRATION FEES INCLUDE: • ADMITTANCE TO TECHNICAL SESSIONS AND TO THE EXHIBITION; • CONFERENCE ELECTRONIC PROCEEDINGS; • SOCIAL EVENT ON OCTOBER 21 (NOT INCLUDED IN THE STUDENT REGISTRATION FEE); • COFFEE BREAKS; • LUNCHESS

FEES FOR DIGITAL PARTICIPATION ARE THE SAME AS ON-SITE ATTENDANCE FEES

REGISTRATION FEES (REVENUE STAMP INCLUDED)

EARLY REGISTRATION FEES BY SEPTEMBER 17, 2021	AIM MEMBER	NON MEMBER
DELEGATE (NON-PRESENTER)	€ 740,00	€ 850,00
EXHIBITOR / SPONSOR	€ 640,00	€ 750,00
SPEAKER (PRESENTER) (BY JULY 30, 2021)	€ 580,00	€ 690,00
SESSION CHAIRPERSON; COMMITTEE MEMBER	€ 580,00	€ 690,00

REGULAR REGISTRATION FEES AFTER SEPTEMBER 17, 2021	AIM MEMBER	NON MEMBER
DELEGATE (NON-PRESENTER)	€ 790,00	€ 900,00
EXHIBITOR / SPONSOR	€ 700,00	€ 810,00

FOR NON-MEMBERS THE FEE INCLUDES AIM MEMBERSHIP FOR THE SECOND SEMESTER OF 2021 AND FOR THE YEAR 2022.

STUDENT REGISTRATION* (VAT INCLUDED)

EARLY REGISTRATION FEE BY SEPTEMBER 17, 2021	€ 390,00	REGULAR REGISTRATION FEE AFTER SEPTEMBER 17, 2021	€ 430,00
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* EITHER DELEGATE OR SPEAKER - Registration for speaker is due **by July 30, 2021**

STUDENTS WILL HAVE TO PROVIDE VALID PROOF OF STUDENT STATUS. THE SOCIAL EVENT ON OCTOBER 21, 2021 IS NOT INCLUDED IN THE STUDENT REGISTRATION FEE

ADDITIONAL TICKET FOR SOCIAL EVENT FOR ACCOMPANYING PERSON: € 122,00 (VAT included)

(Includes only the Social Event on October 21)

TO REGISTER PLEASE FILL-IN THE FOLLOWING REGISTRATION FORM IN ALL ITS PARTS. (IT IS ALSO POSSIBLE TO REGISTER ONLINE - WWW.AIMNET.IT/ECCC2020)

PERSONAL DATA

Please use **BLOCK** letters throughout form (photocopies can be used)

FAMILY NAME _____

FIRST NAME(S) _____

E-MAIL FOR CORRESPONDENCE _____

TEL. _____

INVOICING DATA

COMPANY NAME _____

COMPANY FISCAL ADDRESS _____

ZIP CODE _____ TOWN _____ COUNTRY _____

E-MAIL FOR INVOICING AND BILLING INFORMATION _____

VAT NUMBER _____ ORDER REF. NUMBER (IF REQUESTED ON THE INVOICE) _____

ONLY FOR ITALIAN SOCIETIES

Indirizzo posta elettronica certificate (PEC) _____

Codice destinatario _____

I WILL ATTEND: ON-SITE PARTICIPATION DIGITAL PARTICIPATION

AS: DELEGATE (NON-PRESENTER) - SESSION CHAIRPERSON - EXHIBITOR/SPONSOR - COMMITTEE MEMBER - STUDENT* * A valid proof of student status is required.
 SPEAKER (PRESENTER) PAPER NR. CC _____ AND CC _____ (EACH REGISTRATION COVERS A MAXIMUM OF TWO PAPERS)

AIM MEMBER NON MEMBER €. _____

n. _____ ADDITIONAL TICKET(S) FOR SOCIAL EVENT (OCTOBER 21) FOR ACCOMPANYING PERSON €. _____

TOTAL AMOUNT BEING PAID: €. _____

PAYMENT AND REMITTANCE

by bank transfer, to the order of Associazione Italiana di Metallurgia - AIM at "CREDITO EMILIANO SpA", Branch no. 052 Milano Sede - Via Andegari, 14 - 20121 Milano - Italy, account no. 010000480455 - cod. ABI 03032 - CAB 01600 - cin M IBAN: IT33M0303201600010000480455, swift code BACRIT2MIL. The transfer order must specify the name of the participant and the reference "ECCC". A copy of the transfer order must be sent to AIM, together with the Registration Form.

by credit card online (www.aimnet.it/eccc2020)

against invoice

PRIVACY

I, the undersigned, have read the Privacy notice at the following page and I accept that AIM processes my personal data in accordance with articles 13-14 of EU Regulation no. 679/2016 (GDPR). Furthermore, I authorize AIM:

- to send any invitations to events of interest from other worldwide metallurgical associations: yes no
- to insert my name in the list of event participants: yes no

DATE _____

SIGNATURE _____

PRIVACY NOTICE

Pursuant to artt. 13-14 EU REG. n. 679/2016 (GDPR)

AIM, Italian Association of Metallurgy (VAT number 00825780158), in person of the legal representative Eng. Federico Mazzolari (hereinafter the "Data Controller"), current in Milan, via Turati n. 8, informs you that, pursuant to art. 13 of the EU Regulation n. 2016/679 (hereinafter "GDPR"), your data will be processed in the manner and for the following purposes.

1. Personal Data.

The Data Controller processes personal identifying data (i.e.: name, surname, company name, address, telephone number, e-mail address, username, bank and payment details, hereinafter referred to as "Personal Data") that you have communicated on the occasion of the paper registration or through the website www.metallurgia-italiana.net.

2. Purpose of the treatment.

Your data will be processed by the Data Controller for the following possible purposes:

- transmission of periodic communications by e-mail;
- invitation to activities and/or events promoted by the Data Controller;
- in case of registration on the website www.metallurgia-italiana.net, registration on the site and creation of a user (username and password);
- in case of registration for events, inclusion in the list of participants at the event, receipt of invitations for relevant events from other worldwide metallurgical associations and invoicing of the fee for the participation at the event, if due;
- in case of association with AIM, sending of the membership card;
- in case of purchase of books or other material, delivery of the same and invoicing.

3. Processing methods.

The processing of your personal data is carried out by means of the operations indicated in art. 4 n. 2) GDPR and more precisely: collection, registration, organization, storage, consultation, processing, modification, selection, extraction, comparison, use, interconnection, blocking, communication, cancellation and destruction of data. Your personal data are subjected to both paper and electronic processing. The Data Controller will process personal data for the time necessary to fulfill the aforementioned purposes and in any case for no more than 10 years from the termination of the relationship.

4. Access to the Data.

Your data may be made accessible, for the purposes referred to in art. 2, to the employees and collaborators of the Data Controller, in their capacity as persons in charge and/or internal managers of the processing and/or system administrators.

5. Data communication and data transfer abroad.

The Data Controller may communicate your name, nationality and e-mail address to foreign associations, exclusively in the case of participation in itinerant congress editions.

The aforementioned associations, operating in countries located in or outside the EU, may not provide adequate data protection safeguards (a complete list of countries providing adequate data protection safeguards is available on the EU Guarantor's website for the Protection of Personal Data). In such cases, the transfer of your data will be carried out in compliance with the applicable international rules and agreements, as well as with the adoption of appropriate measures (e.g. standard contractual clauses).

Personal data are stored on servers located in Milan (IT), within the European Union. In any case, it is understood that the Data Controller, if necessary, will have the right to move the servers even outside the EU. In this case, the Data Controller hereby ensures that the transfer of non-EU data will take place in accordance with the applicable legal provisions, subject to the stipulation of the standard contractual clauses provided by the European Commission.

6. Rights of the Data Subject.

In your capacity as a Data Subject, you have the rights set forth in art. 15 GDPR and, precisely, the rights of:

- to obtain confirmation of the existence or not of personal data concerning you, even if not yet registered, and their communication in an intelligible form;
 - to obtain the indication: a) of the origin of personal data; b) of the purposes and methods of the processing; c) of the logic applied in case of treatment carried out with the aid of electronic instruments; d) of the identification details of the Data Controller, the data processors and the designated representative pursuant to art. art. 3, paragraph 1, GDPR; e) the subjects or categories of subjects to whom the personal data may be communicated or who may become aware of it in their capacity as designated representative in the territory of the State, managers or agents;
 - to obtain: a) updating, rectification or, when interested, integration of data; b) the cancellation, transformation into anonymous form or blocking of data processed unlawfully, including data whose retention is unnecessary for the purposes for which the data were collected or subsequently processed; c) the attestation that the operations referred to in letters a) and b) have been brought to the attention, also as regards their content, of those to whom the data have been communicated or disseminated, except in the case where such fulfillment is it proves impossible or involves a use of means manifestly disproportionate to the protected right;
 - to object, in whole or in part, for legitimate reasons to the processing of personal data concerning you, even if pertinent to the purpose of the collection.
- Where applicable, it also has the rights referred to in articles 16-21 GDPR (right of rectification, right to be forgotten, right of limitation of treatment, right to data portability, right of opposition), as well as the right of complaint to the Guarantor Authority.

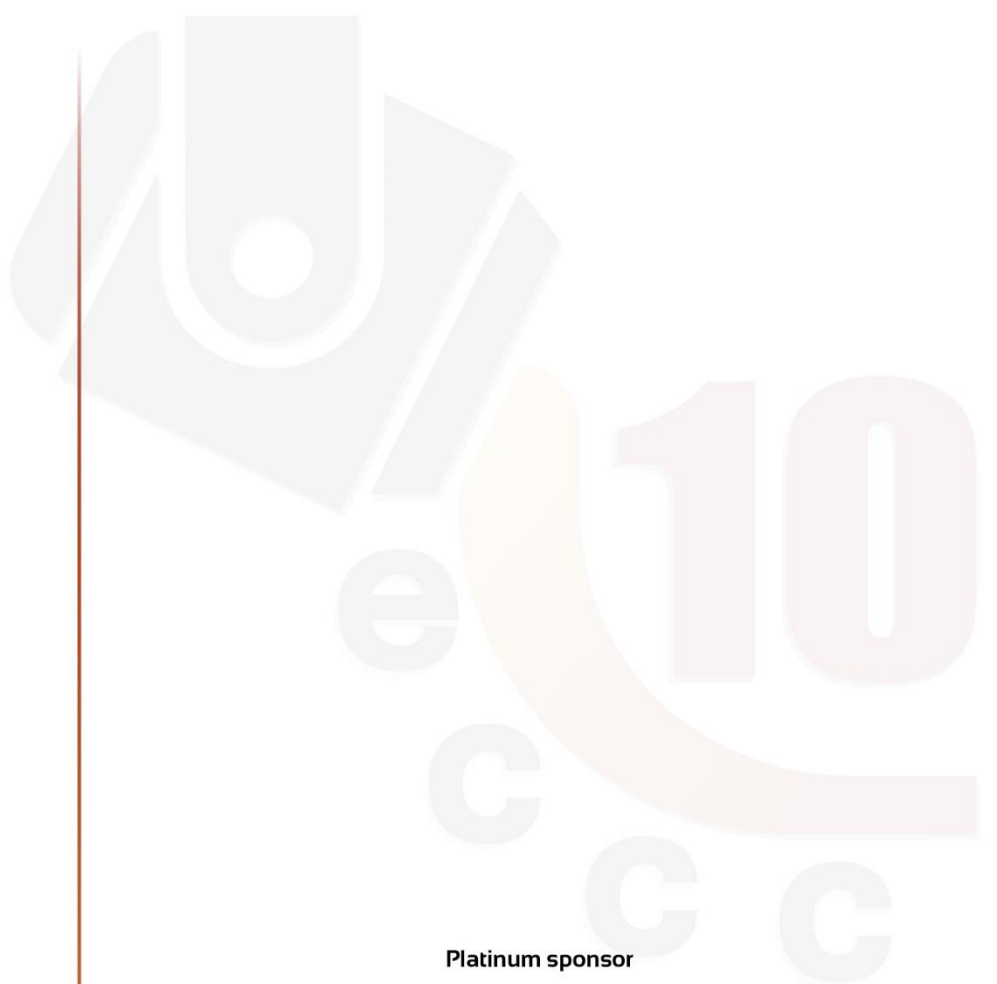
7. How to exercise rights.

You can exercise your rights at any time by sending: a registered letter to AIM, Italian Association for Metallurgy, via Turati n. 8, Milan or an e-mail to info@aimnet.it.

8. Data Controller and person in charge.

The Data Controller is AIM, Italian Association of Metallurgy, via Turati n. 8, Milan. The person in charge of data processing is Ms. Federica Bassani, via Turati n. 8, Milan - e-mail info@aimnet.it.

The updated list of data processors is kept at the Data Controller's headquarters.



Platinum sponsor



Golden sponsor



Silver sponsor



Organising Secretariat



**ASSOCIAZIONE
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DI METALLURGIA**



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