



# International Forgemasters Meeting 2024



**MILANO · ITALY | 27-30 MAY 2024**

## FINAL PROGRAMME

Organised by



**ASSOCIAZIONE  
ITALIANA DI  
METALLURGIA**



**Federacciai**

in cooperation with

**siderweb**  
THE ITALIAN STEEL COMMUNITY

**[www.ifm2024.org](http://www.ifm2024.org)**

# Sunday, 26<sup>th</sup> May 2024

17:00-18:30	Registration of attendees
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# Monday, 27<sup>th</sup> May 2024

8:00	Registration of attendees		
	room ARENA 1+2	room ARENA 3	room ARENA 4
8:50	OPENING SESSION		
10:50		coffee break	
11:20	OPENING SESSION		
12:40		lunch	
14:00	PLENARY LECTURE		
14:30	STEEL FORGINGS I	REFINING, INGOT MAKING & REMELTING I	VIRTUAL SIMULATION & MODELING I
15:50		coffee break	
16:20	STEEL FORGINGS II	REFINING, INGOT MAKING & REMELTING II	VIRTUAL SIMULATION & MODELING II
18:15	TRANSFER SERVICE'S DEPARTURE		
from 19:00	GET-TOGETHER AT <b>VILLA NECCHI CAMPIGLIO</b> - Via Mozart, 14, Milano - <b>FULLY BOOKED</b>		

# Tuesday, 28<sup>th</sup> May 2024

	room ARENA 1+2	room ARENA 3	room ARENA 4
8:40	PLENARY LECTURE		
9:10	STEEL FORGINGS III	NUCLEAR APPLICATIONS I	FACILITIES & EQUIPMENT FOR FORGING & HEAT TREATMENT I
10:50		coffee break	
11:20	STEEL FORGINGS IV	NUCLEAR APPLICATIONS II	FACILITIES & EQUIPMENT FOR FORGING & HEAT TREATMENT II
13:00		lunch	
14:00	STEEL FORGINGS V	SUPERALLOYS & Ti, Al ALLOYS I	FACILITIES & EQUIPMENT FOR FORGING & HEAT TREATMENT III
15:20		coffee break	
15:40	STEEL FORGINGS VI	SUPERALLOYS & Ti, Al ALLOYS II	FACILITIES & EQUIPMENT FOR FORGING & HEAT TREATMENT IV
17:20-17:50	TRANSFER SERVICE'S DEPARTURE		
From 18:30	SOCIAL EVENT AT <b>ALFA ROMEO MUSEUM</b> - Viale Alfa Romeo, Arese		

# Wednesday, 29<sup>th</sup> May 2024

	room ARENA 1+2	room ARENA 3	room ARENA 4
8:50	VIRTUAL SIMULATION & MODELING III	NDE & ON-LINE MEASUREMENTS, DATA ANALYSIS	DECARBONIZATION, H AS FUEL, GREEN STEEL PRODUCTION
10:50		coffee break	
11:10	VIRTUAL SIMULATION & MODELING IV	ENERGY SAVING	FACILITIES & EQUIPMENT FOR FORGING & HEAT TREATMENT V
12:50	CLOSING SESSION: Location of the next IFM & presentation of the Young Speaker Award		
13:15	End of the Conference		



AIM and Federacciai proudly announce that the 22nd International Forgemasters Meeting will be held in Milano (Italy) on 27-30 May 2024.

All involved in and interested in the area of open die forging and ring rolling are warmly invited to attend.

At IFM 2024 the most important and current issues affecting the sector will be discussed.

Experts in the fields of greatest interest will be attending and addressing such issues.

IFM is a unique forum to meet researchers, skilled technicians and decision makers; in other words, IFM 2024 is a not to be missed event for the industry!



# STEERING COMMITTEE



IFM Steering committee chairman  
**Graham Honeyman**  
*Sarach Steel Technologies, United Kingdom*

- Barker Gareth** - *Sheffield Forgemasters, United Kingdom*
- Bassani Federica** – *Associazione Italiana di Metallurgia, Italy*
- Bregant Flavio** - *Federacciai, Italy*
- Edwards Bill** - *Elwood Group, USA*
- Guoqu Shen** - *Erzhong (Deyang) Heavy Equipment Co. Ltd., China*
- Guzzoni Jacopo** - *Fomas group, Italy*
- Gussago Mario** - *Fomec, Italy*
- Hackl Gerhard** - *Asmet, Austria*
- Matsumoto Osama** - *Kobelco Research Institute Inc., Japan*
- Ota Daisuke** - *JSCFA, Japan*
- Rampinini Gabriele** - *Forgiatura A. Vienna, Italy*
- Rech Ralf** - *Consultant, Germany*
- Terhaar Jan** - *Saarschmiede GmbH, Germany*
- Zhang Jin** - *China Forge, China*





## TECHNICAL COMMITTEE



IFM 2024 Technical committee chairman

**Rampinini Gabriele**

*Forgiatura A.Vienna, Italy*

**Anelli Ettore** - *Franchini Acciai Spa, Italy*

**Barella Silvia** - *Politecnico di Milano, Italy*

**Bauer Robert** - *voestalpine High Performance Metals GmbH, Austria*

**Brunelli Daniele** - *Giva Group, Italy*

**Charlton Matthew** - *Scot Forge, USA*

**Chinaglia Luigi** - *Fomas Group, Italy*

**Fujitsuna Nobuyuki** - *Kobe Steel Ltd., Japan*

**Gelfi Marcello** - *Università di Brescia, Italy*

**Ghidini Andrea** - *Lucchini Spa, Italy*

**Guoqu Shen** - *Erzhong (Deyang) Heavy Equipment Co. Ltd., China*

**Holl Albrecht** - *SMS Group GmbH, Germany*

**Lin Zhu** - *China First Heavy Industries, China*

**Lissignoli Alessandra** - *NLMK, Italy*

**Manning Michael P.** - *Florida Turbine Technologies, USA*

**Mapelli Carlo** - *Politecnico di Milano, Italy*

**Marten-Perolino Matteo** - *Cogne Acciai Speciali, Italy*

**Nicholls Ian** - *Sheffield Forgemasters, United Kingdom*

**Ordonez Raymundo** - *Ellwood Materials Technologies, USA*

**Pola Annalisa** - *Università di Brescia, Italy*

**Stockinger Martin** - *Montanuniversität Leoben, Austria*

**Talamantes-Silva Jesus** - *Sheffield Forgemasters, United Kingdom*

**Terhaar Jan** - *Saarschmiede, Germany*

**Yamamoto Yuichi** - *Pacific Steel Mfg.Co.Ltd., Japan*



## Monday, 27<sup>th</sup> May 2024 – ROOM ARENA 1+2

Sunday, 26<sup>th</sup> May 2024

**17:00** Registration of attendees

Monday, 27<sup>th</sup> May 2024

**8:00** Registration of attendees

**8:50** Opening session

Welcome addresses by

**Graham Honeyman** - Chairman of IFM Steering Committee

**Mario Gussago** - Chairman of Federacciai's Forged products section

**9:10** **Welcome address and Steelmaking scenario**

prof. Antonio Gozzi - Federacciai President

**9:30** **[IFM\_026] Recent trends and developments in the heavy open-die forging industry in Japan**

Y. Kumagai - The Japan Steel Works M&E, Inc., Japan

**9:50** **[IFM\_132] Open-die forging in China**

J. Zhang – Confederation of China Metalforming Industry, China

**10:10** **[IFM\_142] Open Die Forgings - an Indian perspective**

A. Gupta, R. Lomash - L&T Special Steels & Heavy Forgings Private Limited, India

**10:30** **[IFM\_111] Open die forging and ring rolling trends in Germany**

T. Hain - Industrieverband Massivumformung, Germany

**10:50** *coffee break*

**11:20** **[IFM\_128] Italy's forging & ring rolling journey – from 2017 till today**

J. Guzzoni - Federacciai / Fomas group, Italy

**11:40** **[IFM\_135] Recent trends and developments in the open die forging industry in the UK**

G. Barker - Sheffield Forgemasters, United Kingdom



**Monday, 27<sup>th</sup> May 2024 – ROOM ARENA 1+2**

**12:00 [IFM\_002] North American forging statistics, fair trade & dept of defense updates**

J.R. Warren - Forging Industry Association, USA

**12:20 [IFM\_013] Update on forged special steels, remelting and powder metallurgy**

B. Blitz - SMR Premium GmbH, Germany

**12:40 *lunch***

**14:00 PLENARY LECTURE**

**[IFM\_151] The way forward to a near zero emissions steel production**

A. Sgrò - Danieli Green Metal, Italy

### **Session STEEL FORGING I**

**CHAIRPERSON: JESUS TALAMANTES-SILVA**

**14:30 [IFM\_023] Results of technical development and mock-up manufacturing for large FXM-19 forging**

S. Park, J. Jeong, W. Lee, D. Kim - Doosan Enerbility, Korea

**14:50 [IFM\_027] Metallurgy and production of low-carbon weldable forged pipes**

E. Anelli, S. Colosio - Franchini Acciai, Italy

**15:10 [IFM\_048] Alloy design and manufacturing of turbine rotor shaft forgings for 630°C steam condition**

S. Ohsaki, A. Okubo - Japan Steel Works M&E, Inc., Japan

K. Miki - The Japan Steel Works, Ltd., Japan

X. Gong, T. Wang, Y. Pei, B. Zhou - DongFang Turbine Co. Ltd., China

**15:30 [IFM\_080] The effect of radial forging machine die geometry on microstructure and ultrasonic propagation of austenitic stainless steel bars**

A. Favre, M. Baisotti, D. Olivero - Cogne Acciai Speciali, Italy

**15:50 *coffee break***



**Monday, 27<sup>th</sup> May 2024 – ROOM ARENA 1+2**



**Session STEEL FORGING II**

CHAIRPERSON: **JAN TERHAAR**

- 16:20 [IFM\_010] “Self-(AUS)tempering” of big forged parts**  
D.A. Reyes, C. Stocky, S. Clemang - ABS Centre Métallurgique, France  
F. Maurigh - Acciaierie Bertoli Safau, Italy
- 16:40 [IFM\_041] Best practice analysis of an industrial cogging process for a tool steel ingot**  
K. Van Putten - SMS group GmbH, Germany  
G. Winning - Friedr. Lohmann GmbH, Germany
- 17:00 [IFM\_046] Statistical evaluation for the maximum size of non-metallic inclusions in a volume**  
Y. Obayashi - Kobe Steel Ltd., Japan
- 17:20 [IFM\_064] Role of process parameters and chemical composition of raw materials in mechanical properties of open die forged AISI 4140 steel**  
C. Paramatmuni, V. Brown, O. Koval, D. Cogswell - University of Sheffield, United Kingdom  
A. Das, E. Pickering - University of Manchester, United Kingdom  
S. Rahimi, B. Wynne - University of Strathclyde, United Kingdom
- 17:40 [IFM\_088] Development of 9Ni steel heavy forgings in a cryogenic engineering**  
Z. Zhang - Shanghai Electric SHMP Casting & Forging Co., Ltd, China and Shanghai Jiaotong University, China  
C. Wang, J. Liang - Central Iron and Steel Research Institute, China
- 18:15 transfer service's departure**  
**From 19:00** Get-together at **Villa Necchi Campiglio** - Via Mozart, 14, Milano





**Monday, 27<sup>th</sup> May 2024 – ROOM ARENA 3**

**14:00 PLENARY LECTURE in room Arena 1+2**

**Session REFINING, INGOT MAKING & REMELTING I**

**CHAIRPERSON: GABRIELE RAMPININI**

**14:30 [IFM\_042] ESR as a solution to solve the segregation issues on nuclear component: Fomas full scale experiment**

L. Chinaglia, T. Brambilla, F. Bonfanti - Fomas Group, Italy

**14:50 [IFM\_017] Results of Thermodynamic Study on the ESR Slag compositions for manufacturing of 10CrMoCoWB rotor steel**

D.-s. Kim, J.-h. Shin, M.-b. Lee - Doosan Enerbility, Korea

S. C. Duan, J.-h. Park - Hanyang University, Korea

**15:10 [IFM\_108] Segment casting- a semi-continuous casting technology for high-end semi-finished products conquers the market**

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

**15:30 [IFM\_009] Better steels by better ingot casting. A forward view**

J. Campbell - The University of Birmingham, United Kingdom

**15:50 *coffee break***



**Monday, 27<sup>th</sup> May 2024 – ROOM ARENA 3**



**Session REFINING, INGOT MAKING & REMELTING II**

CHAIRPERSON: **MATTEO MARTEN-PEROLINO**

- 16:20 [IFM\_117] Danieli Special Metallurgy - introduction of a key player's new product line**  
M. Knabl, H. Graf - Danieli Engineering & Services GmbH, Austria  
R. Sorci - RINA Consulting - CSM, Italy  
C. Tomat, R. Paolone - Danieli & C. Officine Meccaniche, Italy
- 16:40 [IFM\_043] Big ESR ingots as industrial solution to scale up components granting outstanding homogeneity in soundness and trough thickness performances**  
F. Bonfanti, T. Brambilla, L. Chinaglia - Fomas Group, Italy
- 17:00 [IFM\_107] Production of heavy forging ingots via the ESR Process – State of the art and future trends in technologies for the production of super-sized electroslag remelted material**  
M. Kubin, A. Scheriau, H. Holzgruber - INTECO melting & casting technologies GmbH, Austria
- 17:20 [IFM\_022] Ultra-Low inclusion content using double remelting processes at ellwood quality steels**  
B. Connolly - Ellwood Quality Steels, USA
- 17:40 [IFM\_143] Sustainably enhance the quality of segregation-prone steels using electroslag technologies with liquid metal**  
L. Medovar, G. Stovpchenko, J. Gao - Tianjin Heavy Industries Research and Development Co, Ltd, China

**18:15 transfer service's departure**

**From 19:00** Get-together at **Villa Necchi Campiglio** - Via Mozart, 14, Milano



**Monday, 27<sup>th</sup> May 2024 – ROOM ARENA 4**

**14:00 PLENARY LECTURE in room Arena 1+2**

**Session VIRTUAL SIMULATION & MODELING I**

**CHAIRPERSON: RAYMUNDO ORDONEZ**

**14:30 [IFM\_053] Accurate force prediction in multi-pass cogging simulations considering the actual hydraulic press kinematics**

F. Kolpak, K. van Putten - SMS Group GmbH, Germany

**14:50 [IFM\_018] ViRalForge: Virtual Reality for training employees in open-die forging**

N. Reinisch, F. Rudolph, D. Bailly - RWTH Aachen University, Germany

J. Hembach, J. Roggenfelder, B. Kantzow - Weltenmacher GmbH, Germany

D. Beckers - Rosswag GmbH, Germany

**15:10 [IFM\_055] Open die forging material workout and deformation control based on simulation**

N. Biba - Micas Simulations Ltd., United Kingdom

S. Stebunov, D. Gerasimov - QForm Group FZ LLC, United Arab Emirates

H-W. Raedt - prosimalys, Germany

T. Fister - Dr. Fister GmbH, Germany

**15:30 [IFM\_014] Heat-treatment analysis considering transformation plasticity and creep deformation for large forged steel**

Y. Yanagisawa, Y. Kishi - The Japan Steel Works, LTD., Japan

M. Minamiya, K. Saitoh - Japan Steel Works M&E, Japan

**15:50 *coffee break***



**Monday, 27<sup>th</sup> May 2024 – ROOM ARENA 4**



**Session VIRTUAL SIMULATION & MODELING II**

**CHAIRPERSON: FRANCESCA BONFANTI**

**16:20 [IFM\_056] Design and ring rolling simulation for industry with QForm UK and KoPROFILE**

N. Biba - Micas Simulations Ltd., United Kingdom

S. Stebunov, B. Deev, D. Gerasimov - QForm Group FZ LLC, United Arab Emirates

U. Koppers - KOMETeso GmbH & Co. KG, Germany

**16:40 [IFM\_039] Multi-scale approach to microstructure analysis via FEM simulation of open die forging processes**

M. Moreno, P. De Micheli, F. Fracasso, A. Gotti, N. El Kosseifi - Transvalor, France

**17:00 [IFM\_099] Optimization of pre-forging heating procedures: an approach based on finite element modeling**

J. Ferino, A. Meleddu - Astarte Strategies, Italy

M. Longin, G. Camicia - Siderforgerossi Group, Italy

**17:20 [IFM\_032] Study on the integral profiling extrusion process of large nuclear power main pipeline**

Y. Liu, R. Wen, Y. Zhou - Tianjin Heavy Industries R&D Co., Ltd, China

B. Wang - China First Heavy Industries, China

J. Song - China First Heavy Industries Engineering Technology of Dalian Co., Ltd, China

**17:40 [IFM\_062] Heat treatment scalability modelling for low-alloy steels**

A.L. Scarlett, E.J. Palmiere, D. Cogswell - The University of Sheffield, United Kingdom

M. Dear - Rolls-Royce plc, United Kingdom

**18:15 transfer service's departure**

**From 19:00** Get-together at **Villa Necchi Campiglio** - Via Mozart, 14, Milano



**Tuesday, 28<sup>th</sup> May 2024 – ROOM ARENA 1+2**

**8:40 PLENARY LECTURE**

**[IFM\_149] Italian competence for a EU nuclear supply chain**

M.E. Ricotti - Politecnico di Milano, Italy

**Session STEEL FORGINGS III**

CHAIRPERSON: **MATTHEW CHARLTON**

**9:10 [IFM\_105] Nanobainitic steel technology for open-die forgings**

R. Rechenberg, M. Pulawski, G. Korpala, U. Prah - TU Bergakademie Freiberg, Germany

M. Wojtaszek, K. Zyguła, K. Cichocki, A. Łukaszek-Sołek, T. Śleboda, Ł. Lisiecki - AGH University of Science and Technology, Poland

M.B. Jabłońska, M. Tkocz, I. Bednarczyk, K. Kowalczyk - Silesian University of Technology, Poland

**9:30 [IFM\_015] Hot deformation and processing maps of austenitic corrosion resistant lightweight steels**

J. S. Jeong, J. Shin, J-Y. Song, Y-D. Kim, Y-W. Ma - Doosan Enerbility, Korea

**9:50 [IFM\_076] Effect of 600°C reversion treatment to reabsorb  $\alpha'$  forged components made of F51 DSS**

S. Barella, A. Gruttadauria, C. Mapelli, P. Cetto - Politecnico di Milano, Italy

M. Mogliazzi - Officine Ambrogio Melesi & C., Italy

**10:10 [IFM\_031] Research and manufacturing of special-shaped water chamber head with direct connected structure**

R. Wen, Y. Lin, L. Ren - Tianjin Heavy R&D Co. Ltd., China

B. Wang - China First Heavy Industries, China

J. Song - China First Heavy Industries Engineering Technology of Dalian Co., Ltd, China

**10:30 [IFM\_092] Metal additive forging technology – leading the manufacture of high-quality, low-cost, large-scale hundred-ton class forgings for nuclear power**

B. Xu, M. Sun, D. Li - Chinese Academy of Sciences, and CAS Key Laboratory of Nuclear Materials and Safety Assessment, China

**10:50 coffee break**

**Tuesday, 28<sup>th</sup> May 2024 – ROOM ARENA 1+2**



**Session STEEL FORGINGS IV**

CHAIRPERSON: **ETTORE ANELLI**

**11:20 [IFM\_060] Development and properties of 630°C-class rotor for steam turbine**

J-H. Shin, M-B. Lee, W-D. Lee, J-Y. Song, J-s. Jeong, Y-W. Ma, J-W. Lee - Doosan Enerbility, Korea

**11:40 [IFM\_065] Effect of hammer forging parameters on the mechanical properties and microstructure of AISI 4140 steel**

O. Koval, C. Paramatmuni, V. Brown, D. Cogswell - University of Sheffield, United Kingdom

A. Das, E. Pickering - University of Manchester, United Kingdom

S. Hill - W.H. Tildesley Ltd, United Kingdom

R. Turner - University of Birmingham, United Kingdom

**12:00 [IFM\_007] Efforts to improve internal quality of high chromium forged billet**

K. Kurotsu - Nippon Steel Corporation, Japan

**12:20 [IFM\_133] Process development and characterization of critical power generation and subsea components**

A. Ducoli, K. Prestia, D. Caprioli, A. Moro, A. Canciani - Ofar, Italy

**12:40 [IFM\_138] Uninterrupted hot production process of a quenched and tempered forged block – steel grade W.Nr.1.2738 starting from 62t slab ingot**

A. Lissignoli, M. Aldegheri, A. Medeghini, C. Giuliari, P. Marchesini - NLMK Verona, Italy

C. Mapelli, M. Belfi, A. Gruttadauria - Politecnico di Milano, Italy

**13:00 *lunch***





**Tuesday, 28<sup>th</sup> May 2024 – ROOM ARENA 1+2**

**Session STEEL FORGINGS V**

CHAIRPERSON: **RAYMUNDO ORDONEZ**

**14:00 [IFM\_058] Hot deformation characteristics and dynamic recrystallization behaviors of adamite cast steel for work rolls in hot rolling**

Y-J. An - Korea Institute of Industrial Technology, Korea and Sunchon National University, Korea

K-T. Cho, J-Y. Jeon - Korea Institute of Industrial Technology, Korea

S-E. Shin - Sunchon National University, Korea

D-G. Kim - Institute for Advanced Engineering, Korea

**14:20 [IFM\_061] Development of high hardness - toughness forged adamite steel roll**

V.B. Trinh, J. Hirabayashi, T. Ikeno, Y. Yamamoto - Pacific Steel Mfg. Co., Ltd. Japan

S. Seo - Pacific Sowa Co., Japan

**14:50 [IFM\_097] Numerical simulation study on the rolling forming process of large rings with irregular sections**

Y.X. Jiao, H.L. Bai, H.Q. Chen, F. Li, F. Chen - Taiyuan University of Science and Technology, China

**15:00 [IFM\_120] Effect of hot forging conditions on the porosity closure behavior of 8%Cr type die steel cast in a modified-Sato Mold**

K. Chiba, J. Nakagawa, T. Tsuji, Y. Sumi - Daido Steel Co., Ltd., Japan

**15:20 *coffee break***

**Tuesday, 28<sup>th</sup> May 2024 – ROOM ARENA 1+2**



**Session STEEL FORGINGS VI**

CHAIRPERSON: **LUIGI CHINAGLIA**

- 15:40 [IFM\_121] Hot working behavior and microstructural design of ultrahigh-strength medium-Mn martensitic steel intended for automotive forgings**  
A. Kozłowska, W. Borek, K. Matus - Silesian University of Technology, Poland
- 16:00 [IFM\_025] Development of HY-80 high strength forgings**  
D. Kim, J. Oh, J. Ha, D. Kim, J. Shin, W. Lee - Doosan Enerbility, Korea
- 16:20 [IFM\_116] Energy conservation improvement with application of ceramic fiber refractory for forging furnace**  
K. Katayama - Daido Steel Co. Ltd., Japan
- 16:40 [IFM\_089] Effect of boron element on transformation behavior of SA-508M Gr.3 steel**  
X. Wang, Z. Zhang - Shanghai Electric SHMP Casting & Forging Co., Ltd, China and Shanghai Jiaotong University, China  
L. Han - Shanghai Jiaotong University, China
- 17:20 - 17:50 transfer service's departure**  
**From 18:30 Social event at ALFA ROMEO MUSEUM**  
Viale Alfa Romeo - Arese



**Tuesday, 28<sup>th</sup> May 2024 – ROOM ARENA 3**

**8:40 PLENARY LECTURE in room Arena 1+2**

**Session NUCLEAR APPLICATIONS I**

**CHAIRPERSON: NOBUYUKI FUJITSUNA**

**9:10 [IFM\_083] Selection and application of manufacturing technology for head forgings for nuclear power main equipment**

L. Sun, C. Mao, J. Du, H. Yi - Erzhong (Deyang) Heavy Equipment Co., Ltd., China

**9:30 [IFM\_087] Development of integrative bottom head forging for CAP1000 nuclear reactor pressure vessel**

X. Wang, Z. Zhang - Shanghai Electric SHMP Casting & Forging Co., Ltd., China and Shanghai Jiaotong University, China

X. Li - Shanghai Electric SHMP Casting & Forging Co., Ltd., China

**9:50 [IFM\_075] Establishment of melting technology for high strength stainless steel for cryogenic temperature**

R. Otake - Kobe Steel Ltd., Japan

**10:10 [IFM\_021] Study of hot forging simulation and property to develop the CEDM nozzle for reactor vessel**

Y-D. Kim, S-Y. Park, Y-W. Ma - Doosan Enerbility, Korea

**10:30 [IFM\_033] Research on and manufacture of integrated shell with multiple nozzles for nuclear reactor pressure vessel**

G. Shen, C. Mao, L. Sun, Y. Liu, Y. Xie, H. Yi - Erzhong (Deyang) Heavy Equipment Co., Ltd., China

**10:50 *coffee break***



Tuesday, 28<sup>th</sup> May 2024 – ROOM ARENA 3



**Session NUCLEAR APPLICATIONS II**

CHAIRPERSON: **MARCO ENRICO RICOTTI**

- 11:20 [IFM\_070] Characterisation of nuclear forgings using experimental fracture mechanics, finite element analysis and digital image correlation**  
V. Pasialis - Sheffield Forgemasters, United Kingdom
- 11:40 [IFM\_071] Local vacuum electron beam welding for heavy section forgings**  
M. Blackmore, J. Pope, E. Calvert, J. Talamantes-Silva - Sheffield Forgemasters Engineering Ltd., United Kingdom
- 12:00 [IFM\_137] Manufacturing advanced technology dedicated to industrialization of Small Modular Reactor model. Steel characteristic adjusted and special welding experience**  
M. Vitacolonna, D. Quintiliani - Walter Tosto, Italy  
J. Hurst, S. Wolbert - NuScale Energy, Italy
- 13:00 *lunch***



**Tuesday, 28<sup>th</sup> May 2024 – ROOM ARENA 3**

**Session SUPERALLOYS & Ti, Al ALLOYS I**

CHAIRPERSON: **CAYI LIU**

- 14:00 [IFM\_112] Effects of thermo-mechanical treatments on mechanical properties of seamless rolled rings in 5083 aluminium alloy for wind turbine application**  
V. Mahesh, D. Busato, K. Saravanan, R. Meenakshi Sundaram - BAYFORGE Pvt Ltd, India (a FOMAS Group Company, Italy)
- 14:20 [IFM\_067] Optimization of mechanical and microstructural properties of Ti6Al4V alloy depending on hot forging and heat treatment process parameters**  
A. Saleri - Forge Fedriga, Italy
- 14:40 [IFM\_090] The effect of precipitates on grain size and mechanical properties of alloy N08810 forgings for nuclear equipment**  
M-f. Chen, Z-y. Tao - Shanghai Electric SHMP Casting & Forging Co., Ltd., China  
Z-f. Zhang - Shanghai Electric SHMP Casting & Forging Co., Ltd., China and Shanghai Jiao Tong University, China
- 15:00 [IFM\_113] Development of 2618A aluminium alloy forged bars of thickness upto 460mm for use in Spacecraft**  
V. Mahesh, D. Busato, S. Ashok Kumar, A. Gokulan, R. Raghul Deepan – BAYFORGE Pvt Ltd, India (a FOMAS Group Company, Italy)
- 15:20 *coffee break***

**Tuesday, 28<sup>th</sup> May 2024 – ROOM ARENA 3**



**Session SUPERALLOYS & Ti, Al ALLOYS II**

CHAIRPERSON: **DANIELE BRUNELLI**

- 15:40 [IFM\_006] Free forging of large disks from Ni-based superalloy Waspaloy**  
T. Otake, A. Sugino, T. Okajima, T. Ishikawa, R. Kurose - Daido Steel Co., Ltd., Japan
- 16:00 [IFM\_114] Contour open die forgings and seamless rolled rings to “Near Net Shape” concept in aluminium alloys for aerospace applications**  
V. Mahesh, D. Busato, K. Saravanan, S. Ashok Kumar, R. Meenakshi Sundaram - BAYFORGE Pvt Ltd, India (a FOMAS Group Company, Italy)
- 16:20 [IFM\_086] Development of large section IN617M alloy rotor forging for 700°C advanced USC powder plant**  
Y. Nie, Y. Bai, z. Cao, W. Guo, X. Zhang, H. Li, J. Kou - Tianjin Heavy Industries R&D Co, Ltd., China  
B. Wang - China First Heavy Industries, China
- 16:40 [IFM\_153] Numerical simulation and preparation of twin-roll casting aluminum alloy with high solidification interval**  
X. Qian, L. Meng, Y. Peng, C. Liu, Y. Wang, Y. Wang - Yanshan University, China  
Z. Wang - Guangxi University, China and Northeastern University, China  
Y. Li - Northeastern University, China  
H. Tang - Guangxi University, China  
K. Liu - University of Quebec, Canada  
M. Abdelwahed - Ain Shams University, Egypt  
S. Barella, A. Gruttadauria, C. Mapelli - Politecnico di Milano, Italy

**17:20 - 17:50 transfer service's departure**

**From 18:30 Social event at ALFA ROMEO MUSEUM**

Viale Alfa Romeo - Arese





**Tuesday, 28<sup>th</sup> May 2024 – ROOM ARENA 4**

**8:40    PLENARY LECTURE in room Arena 1+2**

**Session FACILITIES & EQUIPMENT FOR FORGING & HEAT TREATMENT I**

**CHAIRPERSON: ALBRECHT HOLL**

- 9:10    [IFM\_084] Additive billet and FGS forging for large forgings**  
B. Wang, D. Zhao, Y. Liu, Y. Nie, X. Zhang, R. Wen - China First Heavy Industries, China
- 9:30    [IFM\_036] Development of an integrated and advanced heavy rings mill production management and process control system**  
D. Mesiti, A. Miani - Tech in Sider - RBF Dmat, Italy  
I. Boriani - Forgiatura A. Vienna, Italy
- 9:50    [IFM\_037] Development of a water-spray quenching method by pulse-width modulation control**  
K. Saitoh, Y. Kobayashi, S. Tanaka, Y. Kumagai - Japan Steel Works M&E Inc., Japan
- 10:10    [IFM\_051] Smart Forging – Processing ingots by autonomic forging and sustainable heat treatment processes to premium bars**  
F. Hippenstiel, W. Janz, M. Mueller - BGH Edelstahl Siegen GmbH, Germany
- 10:30    [IFM\_029] Automatic bick ironing device - A novel solution for shaping critical dimensions and consistent thicknesses**  
M. Mancini - Hydromec-SMS Group, Italy
- 10:50    *coffee break***

**Tuesday, 28<sup>th</sup> May 2024 – ROOM ARENA 4**



**Session FACILITIES & EQUIPMENT FOR FORGING & HEAT TREATMENT II**

**CHAIRPERSON: CARLO MAPELLI**

- 11:20 [IFM\_106] New special steelplant for 8 t heat size – The path from project idea & pre-investment study to successful execution**  
C. Redl, A. Stückelschwaiger, R. Zottler - INTECO melting & casting technologies GmbH, Austria
- 11:40 [IFM\_085] Design of solid compound additive billet production process for large metal forgings**  
X. Zhang, Z. Zhu, K. Yang, L. Zhu - China First Heavy Industries, China and Tianjin Heavy Industries R&D Co., Ltd., China  
K. Liu, B. Wang - Tianjin Heavy Industries R&D Co., Ltd., China
- 12:00 [IFM\_047] Improving the efficiency of the round bar forging process by Four-Die Forging Device (FDFD)**  
M. Todokoro, A. Aoyama, S. Tanaka, Y. Kumagai - Japan Steel Works M&E, Inc., Japan  
V. Lazorkin, D. Lazorkin - Lazorkin Engineering, LLC, Ukraine
- 12:20 [IFM\_001] Four-Die Forging Devices (FDFDs) and forging technologies developed by Lazorkin-Engineering company**  
V. Lazorkin, D. Lazorkin, R. Onischenko, - Lazorkin-Engineering LLC, Ukraine  
S. Kuralekh - Lazorkin-Engineering LLC, Germany

**13:00 *lunch***



**Tuesday, 28<sup>th</sup> May 2024 – ROOM ARENA 4**

**Session FACILITIES & EQUIPMENT FOR FORGING & HEAT TREATMENT III**

**CHAIRPERSON: IVAN BORIANI**

- 14:00 [IFM\_052] New 70 MN forging shop at Lucchini RS Group**  
M. Baldassi - Danieli & C., Italy  
M. Guarino - Lucchini RS, Italy
- 14:20 [IFM\_028] A giant for new applications - the world's most powerful ring rolling machine**  
M. Bogdahn, R. Düser - SMS group GmbH, Germany
- 14:40 [IFM\_008] HP3 Hydraulic Drive**  
L. Bertoldi - Vecchiato Officine Meccaniche, Italy
- 15:00 [IFM\_100] Experience of the 18MN hydraulic radial forging machine at Jiuli Yongxing High Performance Metals Co., Ltd.**  
Q. Nai, X. Wang, F. Wang, X. Shen - Huzhou Jiuli Yongxing High Performance Metals Co., Ltd., China
- 15:20 *coffee break***

**Session FACILITIES & EQUIPMENT FOR FORGING & HEAT TREATMENT IV**

**CHAIRPERSON: SILVIA BARELLA**

- 15:40 [IFM\_119] Automation, safety, efficiency: automatic heat treatment line for forged alloys**  
S. Locatelli, S. Adorisio - Gadda Industrie, Italy
- 16:00 [IFM\_095] An innovation forging technology for the world's largest austenitic stainless steel ring**  
F. Wang, W. Yin, Y. Niu, X. Ren - Iraeta Energy Equipment Co., Ltd, China  
M. Sun, B. Xu, L. Zhao - Chinese Academy of Sciences, China
- 16:20 [IFM\_063] Innovative metal forging: introducing the RX-GFM radial forging machine and technology**  
M. Auer, F. Kloibhofer, R. Koppensteiner - GFM GmbH, Austria
- 16:40 [IFM\_150] Slingolab: R&D at the service of safety and compliance with regulations**  
A. Romele - Slingofer, Italy
- 17:20 - 17:50 transfer service's departure**  
**From 18:30 Social event at ALFA ROMEO MUSEUM**  
Viale Alfa Romeo - Arese

Wednesday, 29<sup>th</sup> May 2024 – ROOM ARENA 1+2



**Session VIRTUAL SIMULATION & MODELING III**

CHAIRPERSON: **MARTIN STOCKINGER**

- 8:50 [IFM\_118] Simulation and optimization of VIM process for Inconel alloys**  
L. Premoli, D. Brunelli - GIVA Group, Italy  
C. Veronesi, A. Febbrari, M. Menga - Italfond, Italy  
M. Gelfi, A. Pola - Università di Brescia, Italy
- 9:10 [IFM\_019] Microstructure calculation based development of open die forging processes**  
J. Jarolimeck, E. Baumbach, A. Diwo, J. Terhaar - Saarschmiede GmbH, Germany
- 9:30 [IFM\_012] ForgeBase® Forging Technology Suite – Advanced tools for process design and analysis in open-die forging**  
M. Wolfgarten, D. Sommler, A. Zafari - SMS group GmbH, Germany
- 9:50 [IFM\_030] Macrosegregation analysis and 3D numerical prediction of a 19-ton steel ingot with complex shape**  
T. Nishimura, K. Tani, T. Saito - Kobe Steel, Ltd., Japan  
A. Kishimoto - Kobe Steel, Ltd. (Now Kubota Corporation), Japan
- 10:10 [IFM\_129] FEM study on the influence of the press velocity near the bottom dead center on the resulting properties of forged parts**  
F. Kolpak, A. Back, K. van Putten, M. G. Scholles - SMS Group GmbH, Germany
- 10:30 [IFM\_038] Isothermal forging on upgraded open-die forging press for aerospace applications**  
N. El-Kosseifi, J. Alves, J. Barlier, M. Moreno - Transvalor, France  
O. Buck - Wepuko Pahnke, Germany

**10:50 *coffee break***





**Wednesday, 29<sup>th</sup> May 2024 – ROOM ARENA 1+2**

**Session VIRTUAL SIMULATION & MODELING IV**

**CHAIRPERSON: ANNALISA POLA**

- 11:10 [IFM\_082] Calibration and extension of a damage model for use in open-die forging processes**  
M. Gouverneur, D. Bailly - RWTH Aachen University, Germany
- 11:30 [IFM\_005] Ring rolling 4.0 – 3D real-time simulation for profiled rings with “KoPROFILE”**  
U. Koppers - KOMET Engineering Office and KOMETeso GmbH & Co.KG, Germany
- 11:50 [IFM\_024] Development of auto simulator of ladle refining process based FactSage thermodynamic analysis**  
J-h. Kim, D-S. Kim, I-h. Jung, M-A. Van Ende, S-h. Kwon - Doosan Enerbility, Korea
- 12:10 [IFM\_131] Digitalization of hydrogen on forging: from ingot casting to forging and heat treatment using simulation software**  
C. Viscardi - Ecotre Valente, Italy
- 12:30 [IFM\_003] Enhancing ring rolling simulation accuracy with the machine digital twin**  
A. Sartori, M. Ricci, M. Brun - Muraro, Italy  
U. Konnerth - Schuler Pressen GmbH, Germany
- 12:50 *Closing session: Location of the next IFM & presentation of the Young Speaker Award***
- 13:15 *End of the Conference***

Wednesday, 29<sup>th</sup> May 2024 – ROOM ARENA 3



**Session NDE & ON-LINE MEASUREMENTS, DATA ANALYSIS**

CHAIRPERSON: **GIOVANNI FANTINI**

- 8:50 [IFM\_072] Process data analysis for automated fingerprint generation of forging operations**  
G. Maier, V. Wieser, T. Leitner - voestalpine Böhler Edelstahl GmbH & Co KG, Austria
- 9:10 [IFM\_034] Evaluation of deoxidation state in molten steel using image recognition technique of reduction slag by machine learning**  
T. Sowa, Y. Seki, T. Suzuki, S. Tanaka - Japan Steel Works M&E, Inc., Japan
- 9:30 [IFM\_016] The 3D model in manufacturing process of the forging products**  
M. Iwaizumi - Japan Steel Works M&E, Inc., Japan
- 9:50 [IFM\_068] Quantitative evaluation of ladle refractory erosion using a 3D measuring instrument**  
Y. Abe, K. Takahashi, Y. Seki, S. Tanaka - Japan Steel Works M&E, Inc., Japan
- 10:10 [IFM\_077] An advanced system to optimally control and simulate semi-finished casting products scheduling in a steel plant**  
G. Astolfi, F. Luzi, E. Moscoloni, L. Orlietti, R. Rosati, A. Silenzi, L. Standardi, C. Valzecchi - Alperia Green Future, Italy
- 10:30 [IFM\_050] FutureForge – An overview of a new state-of-the-art experimental near industrial-scale forge facility**  
P. Parolin, D. Easton, A. Conway, B.P. Wynne - University of Strathclyde, United Kingdom

**10:50 coffee break**



Wednesday, 29<sup>th</sup> May 2024 – ROOM ARENA 3

**Session ENERGY SAVING**

CHAIRPERSON: **DANIELE BRUNELLI**

- 11:10 [IFM\_073] Optimizing forge energy consumption with induction technology and simulation tools**  
M. Cesano, G. Griffero - SAET, Italy
- 11:30 [IFM\_081] FAST-forge – a circular materials approach for forging of titanium components**  
D. Easton, A. Banerjee, A. Wylie, P. Parolin, S. Rahimi, B. Wynne - University of Strathclyde, United Kingdom  
S. Lister, M. Jackson - University of Sheffield, United Kingdom
- 11:50 [IFM\_004] Energy savings applied to hot forging presses using kinetic accumulators**  
A. Sartori, M. Ricci, M. Brun - Muraro, Italy
- 12:10 [IFM\_145] Technical solutions for energy saving & energy management applied to hot forging / hot forging hydraulic presses**  
L. Rasca, R. Sala, D. Pirovano - Mossini, Italy
- 12:50** *Closing session in Arena 1+2: Location of the next IFM & presentation of the Young Speaker Award*
- 13:15** *End of the Conference*

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Wednesday, 29<sup>th</sup> May 2024 – ROOM ARENA 4



**Session DECARBONIZATION, H AS FUEL, GREEN STEEL PRODUCTION**

CHAIRPERSON: **GRAHAM HONEYMAN**

- 9:10 [IFM\_110] Energy-efficient and hydrogen-ready flameless oxyfuel solutions for forge furnaces**  
J. von Schéele, P. Kwaschny, H. Alshawarghi, G. Doijad, W. Bridger,  
D. Razzari, A. Curto - Linde GmbH, Germany
- 9:30 [IFM\_079] On the decarbonization path: natural gas (100% vol.) vs hydrogen (100% vol.) comparative heat treatment tests on forged products**  
F. Bonfanti, T. Brambilla - Fomas, Italy  
M. Macario, M. Teani - GF-Elti, Italy
- 9:50 [IFM\_020] OxySteel -The pilot plant at Breitenfeld Edelstahl for greener steel**  
F. Schneller, A. Graf - Breitenfeld Edelstahl AG, Austria  
J. Rauch, C. Gaber - Messer Austria GmbH, Austria  
T. Kienberger, J. Dock - Montanuniversität Leoben, Austria
- 10:10 [IFM\_115] A comparison of reheating metals in combustion processes using natural gas and hydrogen fuels**  
J. Dzik - Fives North American Combustion, USA
- 10:30 [IFM\_130] Developing Pahnke electro-hydraulic machinery in a virtual environment**  
A. Dejanovic - Wepuko Pahnke, Germany
- 10:50 *coffee break***





Wednesday, 29<sup>th</sup> May 2024 – ROOM ARENA 4

**Session FACILITIES & EQUIPMENT FOR FORGING & HEAT TREATMENT V**

CHAIRPERSON: **MARCELLO GELFI**

- 11:10 [IFM\_054] Renewal of Kobe Steel small size forging factory**  
T. Ikegami - Kobe Steel Ltd., Japan
- 11:30 [IFM\_127] Increased machine availability through predictive maintenance**  
R. Dango - Dango & Dienenthal Maschinenbau GmbH, Germany
- 11:50 [IFM\_074] Optimizing steel block quenching for plastic injection molds: a simulation-based approach to eductor-enhanced agitation**  
C. Llovo Vidal, J. Cerdón Velaz - Reinoso Forgings & Castings, Spain  
L. García Sánchez, R. Báscones Vega - Centro Tecnológico CTC, Spain
- 12:10 [IFM\_136] Following the 100.000 ton Tyson press, started in in 2013, Forgiatura A. Vienna make another step beyond the state of the art: a new press powered at the limit of actual available technology**  
M. Petracco, D. Brunelli - Forgiatura A. Vienna, Italy  
A. Valiante, P. Marangoni HTS - Hydraulic Technology System, Italy
- 12:30 [IFM\_057] Latest developments in abrasive cutting and grinding of large-scale forgings**  
N. Asamer - Braun Maschinenfabrik GmbH, Austria
- 12:50 *Closing session in Arena 1+2: Location of the next IFM & presentation of the Young Speaker Award***
- 13:15 *End of the Conference***

## Poster session



**[IFM\_045] Modeling of the stress-strain state in the vicinity of the structural components of economically alloyed steels with combined technology: forging with alternating deformation and heat treatment**

I. Stepankin - Belorusneft, Belarus

D. Kuis - Belarusian State Technological University, Belarus

E. Panin, A. Tolkushkin, G. Akhmetova - Karaganda Industrial University, Kazakhstan

**[IFM\_049] New technology of ferrous metals bar scrap recycling with the production of a reinforcing profile, as the "greening" direction of the metallurgical industry**

S. Lezhnev, A. Naizabekov - Rudny Industrial University, Kazakhstan

E. Panin - Karaganda Industrial University, Kazakhstan

A. Arbuz - Nazarbayev University, Kazakhstan

**[IFM\_066] Validation of robust location-specific mechanical property prediction for high-integrity applications highlighting industry 4.0 ideals, materials data generation and process simulation for a 4140 grade steel ingot**

D. Cogswell - The University of Sheffield, United Kingdom

E. Pickering - University of Manchester, United Kingdom

C. Davies - Imperial College London, United Kingdom

S. Rahimid - University of Strathclyde, United Kingdom

M. Blackmoree - Sheffield Forgemasters Engineering Ltd, United Kingdom

**[IFM\_096] Grain structure homogeneity control during hot working of large forgings**

H. Chen, J. Liu, Y. Xu, S. Dang - Taiyuan University of Science and Technology, China

**[IFM\_125] Prediction of shape rolling defects based on preform ratio using finite element analysis**

S-H. Jung, M. Kim, GW. Jung, TH. Choi, J. Song, J. Lee - Korea Institute of Industrial Technology, Korea

**[IFM\_139] Research of glass protective lubricants for red-hot metal forgings**

C. Feng, J-f. Wang, S-j. Duan - Beijing Tianlichuang Glass Technology Development Co., Ltd., China

**[IFM\_069] A study on the prediction of the limit life of cold forging die**

Y.H. Seo, J.H. Song, G.H. Bae - KITECH, Korea



## Poster session

**[IFM\_140] Modeling of heat transfer during controlled cooling of medium to large size non-quenched steel bars**

W. Ma, Y. Rao, S. Ren, L. Sun, R. Song - University of Science and Technology Beijing, China

**[IFM\_141] Evaluation of thermal conductivity and thermal expansion coefficient for 42CrMo4 forged steel piston**

Y. Rao, R. Song, W. Ma, S. Ren, L. Sun - University of Science and Technology Beijing, China

**[IFM\_144] Revamping of rolling mill rolls via ESS LM**

L. Medovar, G. Stovpchenko - Tianjin Heavy Industries Research and Development Co, China

**[IFM\_146] Development of H-beam roll-force prediction model in universal finishing mill**

H-S. Jung, C-H. Wee, J-E. Lee, K-H. Seo, J-M. Park - HYUNDAI Steel, Korea  
S-G. Kim - Chung Ang University, Korea

**[IFM\_147] Development of surface defects prediction model and its application to rolling mill for producing large-sized bar**

J. Lee, C. Wee, J. Lee, W. Choi, W. Jin - Hyundai-Steel, Korea  
D. Lee, G. Nam - Chung-Ang University, Korea

**[IFM\_154] Roll wear prediction model based on mechanism data and software development in hot strip rolling**

R. Li, S. Tao, X. Zhang, Y. Peng, S. Guo, C. Liu, X. Qian, - Yanshan University, China  
S. Barella, A. Gruttadauria, M. Belfi, C. Mapelli - Politecnico di Milano, Italy  
M. Abdelwahed - Ain Shams University, Egypt

**[IFM\_155] Centrifugal casting of 2139 aluminum alloy: numerical simulation based on ProCAST and experimental preparing**

X. Qian, Y. Wang, Y. Peng, C. Liu, J. Liang, L. Meng, Y. Wang - Yanshan University, China  
Z. Wang - Guangxi University, China and Northeastern University, China  
H. Tang - Guangxi University, China  
K. Liu - University of Quebec, Canada  
S. Barella, A. Gruttadauria, M. Belfi, C. Mapelli - Politecnico di Milano, Italy  
M. Abdelwahed - Ain Shams University, Egypt





## GENERAL INFORMATION

### CONFERENCE VENUE

The Conference will be held in Assago Milano (Italy) at NH Milano Congress.

How to reach the Conference venue [>>link](#)

### LANGUAGE

The official language of the Conference will be English.

### PROCEEDINGS

The full texts of all accepted papers will be published in the electronic form proceedings and issued to delegates at the Conference. A selection of the best papers will be also published in "La Metallurgia Italiana - International Journal of the Italian Association for Metallurgy" - the scientific journal of AIM, which is covered in the Science Citation index Expanded by Clarivate Analytics (formerly Thomson Reuters), and in Scopus by Elsevier B.V

### CANCELLATION AND REFUND POLICY

A refund, less 20% deduction for administrative costs, will be issued for written cancellations received **by March 29, 2024**. For attendees who notify their cancellation **after March 29, 2024**, 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.

### SPEAKERS CANCELLATION AND REFUND POLICY

A refund, less 20% deduction for administrative costs, will be issued for written cancellations received **before January 31, 2024**. For speakers who notify their cancellation **after January 31, 2024**, 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.

### 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.





# 9th ECIC

## European Coke and Ironmaking Congress

COAL, COKE, BIOCOAL, BIOCOKE, BIOCHAR AND IRON REDUCTION

Bardolino · Italy · 16-18 October 2024

AIM is glad to announce the 9th European Coke and Ironmaking Congress (ECIC) to be held in Bardolino, Italy, on 16-18 October 2024.

ECIC 2024 will focus on the newest technologies in coke making, sintering, pelletizing, pyrolyzing the bio-masses and ironmaking (blast furnaces, direct reduction and carbon-based smelting processes).

The 2025 goal of carbon neutrality and the related intensive efforts of the steel industry will significantly affect the technologies for iron ore reduction. In this perspective, the shortage of iron ores matching the requirement for direct reduction by gas and for melting in electric arc furnace makes important proposal of new technologies and devices that can ensure the carbon neutrality even for the coal based routes.

This Congress will focus on technologies that can achieve such a goal improving the efficiency of the existing process, applying the devices that avoid a net emission of green house gases and to point out new routes based on exploitation of biomasses whose net emission is intrinsically neutral.

### SCOPE AND TOPICS

The 9th ECIC will address both fundamental research work and evaluation and plant operational results and plant construction. The Congress will bring together a wide range of experts, coming from plant operation, plant suppliers, universities and research institutes, who share expertise in:

- Cokemaking
- Production of Biocoal/biochar
- Industry 4.0 in ironmaking
- Sintering, pelletising, briquette production
- Direct reduction and Smelting reduction
- Blast furnace ironmaking
- Blast Furnace muds
- CCS/CCUS (Carbon Capture, Use and Storage)
- Impact of Carbon Border Adjustment Mechanism (CBAM)
- H2 and Syngas exploitation

The event will provide a forum for best practise and state-of-the-art technology, new developments, new ideas and research results.

### CONGRESS CHAIRMEN

Prof. Carlo Mapelli - Politecnico di Milano, Italy

Prof. Johannes Schenk - Montanuniversität Leoben, Austria

### SUBMISSION OF PAPERS AND DEADLINE

All paper proposals must be submitted online, at [www.aimnet.it/ecic](http://www.aimnet.it/ecic), by **30 April 2024**.

All abstracts will be refereed by the scientific international experts. In the case of too many submissions, abstracts of equal quality will be accepted on a first come, first serve basis. To submit an abstract, please proceed as follows:

1. Write your abstract (max. 300 words).
2. Submit your abstract online at: [www.aimnet.it/ecic](http://www.aimnet.it/ecic) > Call for Papers section (please fill out all fields).
3. Papers must be submitted in English.

### ORGANIZING SECRETARIAT



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