

FINAL PROGRAMME



ECHT²⁰²³

European Conference
on Heat Treatment

HEAT TREATMENT & SURFACE ENGINEERING

GENOVA - ITALY

29-31 MAY 2023

Organised by



**ASSOCIAZIONE
ITALIANA DI
METALLURGIA**

member of



FEMS
FEDERATION OF EUROPEAN
MATERIALS SOCIETIES

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**International
Forgemasters Meeting
2024**

Organised by



**ASSOCIAZIONE
ITALIANA DI
METALLURGIA**



Federacciai

**MI- | 27-30
LA- | MAY
NO | 2024**

International Forgemasters Meeting

AIM and Federacciai proudly announce that the 22nd International Forgemasters Meeting will be held in Italy in 2024.

Save the date!

The appointment will be in Milan 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 an unmissable event for the forging industry!

Call for papers

Prospective authors wishing to present papers are invited to submit a tentative title and an abstract of about 400 words (in English), specifying a maximum of two topics for each proposal, to the Organising Secretariat.

Visit website **www.ifm2024.org** to submit your abstract.

Deadlines

Submission of abstracts: 30 June 2023

Information on acceptance: 13 October 2023

Submission of full papers and speakers registration: 15 December 2023

Exhibition & sponsorship opportunities

The Conference will be enhanced by an Exhibition at which companies will have the opportunity to inform all delegates of their latest developments. The detailed exhibiting and sponsorship packages will be available on the IFM 2024 website in the following months. In the meantime, companies interested in taking part in the Exhibition or sponsoring the event may contact:

siderweb
THE ITALIAN STEEL COMMUNITY

e-mail: commerciale@siderweb.com
tel. +39 030 2540006

Organising secretariat



**ASSOCIAZIONE
ITALIANA DI
METALLURGIA**

Via Filippo Turati 8 - Milan - Italy

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17TH INTERNATIONAL CONFERENCE ON SEMI SOLID PROCESSING OF ALLOYS AND COMPOSITES

BRESCIA · ITALY, 6-8 SEPTEMBER 2023

On behalf of the Organizing Committee, we are pleased to invite you to the **17th International Conference on Semi Solid Processing of Alloys and Composites (S2P2023)**, which will be held from September 6th to 8th, 2023 in Brescia, Italy. The 17th S2P International Conference focuses on the advancement in fundamental knowledge and development of materials and industrial processes for semi-solid manufacturing of high-performance metal components. This conference will continue a successful series of conferences on semi-solid processing of alloys and composites started in 1990. We are looking forward to welcoming you in Italy!

TOPICS

The Conference is devoted to all aspects of semi-solid processing of metals alloys and composites with emphasis on basic research, engineering application as well as market aspects. Results of engineering research and experience as well as scientific issues are relevant for the conference.

ORGANISING SECRETARIAT

AIM – Associazione Italiana di Metallurgia
Via Filippo Turati 8 – 20121 Milano – Italy
Tel. +39 0276021132 or 0276397770
met@aimnet.it – www.aimnet.it/s2p/

SUPPORTER & MEDIA PARTNERS

SCOPE

SCOPE

AIM is glad to announce the ECHT 2023 Conference, to be held in Genova, at Magazzini del Cotone, on 29-31 May 2023!

ECHT 2023 will cover all relevant topics for the Heat Treatment & Surface Engineering community. The Conference will have a special focus on sustainability!

Sustainability, with its three pillars - environmental, economic and social dimensions - is playing a keyrole to address the ongoing and future challenges. The metallurgical and mechanical industry are leading the way in creating a healthy development model for the environment and for the future generations. Presentations and papers from Industry, University and Research Centres on the topic will encourage the discussion and increase awareness on the matter.

We are looking forward to meeting you in beautiful Genova!

INTERNATIONAL COMMITTEE

Imre Felde - Óbuda University /Hungary
Stefan Hock - IFHTSE
Bernard Kuntzmann - SVW / Switzerland
Klaus Löser - AWT / Germany
Enrico Morgano - AIM / Italy
Reinhold Schneider - ASMET / Austria
Marcel Somers - Technical University of Denmark
Eva Troell - RISE IVF Research Institutes / Sweden
Bernard Vandewiele - VWT / Belgium
Veronique Vitry - A3TS / France
Filip Vráblík - ATZK / Czech Republic

LOCAL ORGANISING COMMITTEE

Federica Bassani - AIM
Giovanni Bolelli - Università di Modena e Reggio Emilia
Costanza Colombo - Agrati Group
Mario Cusolito - AIM
Sabrina De Donato - AIM
Francesca Ecclesia - Stellantis CRF
Donato Firrao - Politecnico di Torino
Marcello Gelfi - Università di Brescia
Marina La Vecchia - AIM
Enrico Morgano - Silco
Silvano Panza - AIM
Massimo Pellizzari - Università di Trento
Danilo Petta - Gearchem
Valentina Vicario - Soliveri

MONDAY, 29 MAY 2023
SCIROCCO – LIBECCIO ROOM

9:45 Attendees registration

OPENING SESSION: HEAT TREATMENT & SUSTAINABILITY

Chairperson: Enrico Morgano

10:50 Welcome addresses

Enrico Morgano - President of AIM Heat Treatment Study Group

Tribute to eng. Daniele Franchi

11:20 **[HT_030]** Mapping sustainability aspects in the Swedish heat treatment industry

J. Wendel, E. Troell - *RISE Research Institutes of Sweden AB, Sweden*

11:40 **[HT_044]** Heat treatment from a sustainability perspective

K. Buchner - *Aichelin Holding GmbH, Mödling, Austria*

12:00 **[HT_038]** Bio-based quenching fluid for a more sustainability heat treatment process and factory

P. Martelli - *F.Ili Temponi Trattamenti Termici, Italy*

S. Bianchi - *Lubrinnova, Italy*

L. Parodi - *Valore CO2, Italy*

12:20 **[HT_024]** CO2 emissions reduction for Heat Treatment Operation

E. Pauty, A. Betemps, G. Tissot, P. Bertoni - *ECM Technologies, France*

12:40 **[HT_056]** Economic and efficient low pressure carburizing in pit furnaces

P. Okińczyc - *SECO/WARWICK S.A., Świebodzin, Poland*

13:00 lunch

INDUSTRIAL EQUIPMENT & PROCESSES

Chairperson: Paolo Buzzi

- 14:20 [HT_010] Perspective of hydrogen use in heat treatment as atmosphere gas and energy vector**
L. Bustamante Valencia, M. A. Jamli - *Air Liquide France Industrie, Bagneux, France*
A. Spizzica - *Air Liquide Italy, Milano, Italy*
N. Ehrlin - *Air Liquide Nordics, Malmo, Sweden*
T. Braun, G. Lehmkuhl - *Air Liquide Deutschland GmbH, Krefeld, Germany*
D. Nadolski - *Air Liquide R&D, Krefeld, Germany*
- 14:40 [HT_006] Preliminary study on behaviour of lifting systems used during heat treatments at high temperature**
V. Vicario, I. Bergonzi - *Soliveri, Italy*
M. Gelfi - *Università di Brescia, Italy*
R. Frigerio, L. Spreafico - *Stamperia Carcano, Italy*
- 15:00 [HT_042] New opportunities in energy saving by using induction heating industrial processes**
A. Candeo, M. Cesano, D. Ciscato, L. Scarpellini - *SAET, Italy*
- 15:20 [HT_019] HIP: Process Management, gas quality control and recovery**
A. Recanati - *SIAD, Italy*
S. Bruschetta - *T.A.G., Italy*
- 15:40 [HT_055] Induction heat treatment of automotive components in industrial environments**
A. Ulferts - *Inductoheat Europe GmbH, Germany*
V. Tosetto - *Inductotherm Group Italy*
- 16:00 coffee break**

SCIROCCO – LIBECCIO ROOM
MONDAY, 29 MAY 2023

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HEAT TREATMENT FOR ADDITIVE MANUFACTURING

Chairperson: Valentina Vicario

- 16:30 [HT_009] Heat treatment of a Beta-Ti21S alloy produced by additive manufacturing**
L. Emanuelli, V. Tonon, M. Pellizzari - *Università di Trento, Italy*
G. Valsecchi - *TAV, Caravaggio (BG), Italy*
C. Lora - *SISMA, Piovene Rocchette (VI), Italy*
- 16:50 [HT_047] Recrystallization and grain growth in additively manufactured Hastelloy X**
F. Deirmina, O. Adegoke, P. Jonnalagadda, A. Sidharthan - *Siemens Energy, Sweden*
M. Del Col, M. Pellizzari - *Università di Trento, Italy*
- 17:10 [HT_052] Definition of an optimal solutioning treatment for a Ni-based superalloy processed by Additive Manufacturing**
P.A. Martelli, M.S. Kenevisi - *Politecnico di Torino and Centro Interdipartimentale Integrated Additive Manufacturing, Italy*
E. Bassini, D. Ugues - *Politecnico di Torino, Centro Interdipartimentale Integrated Additive Manufacturing and Consorzio Nazionale della Scienza e Tecnologia dei Materiali, Italy*
- 17:30 [HT_001] Effect of two-step heat treatment on microstructure and mechanical properties of additively manufactured tool steel**
L. Kučerová, K. Burdová, Š. Jeníček, I. Chena - *University of West Bohemia, Czech Republic*
- 17:50 [HT_050] Heat treatment optimization for a martensitic precipitation hardening-stainless steel manufactured via Laser Powder Bed Fusion**
M. Zanni, A. Morri, L. Ceschini - *Università di Bologna, Italy*
M. Pellizzari - *Università di Trento, Italy*
- 18:10 End of the first day**

NITRIDING AND CARBURIZING I

Chairperson: Lucas Bustamante Valencia

- 8:50 [HT_049] Study on nitriding mechanism for modified layer of aluminum using barrel nitriding**
M. Okumiya, H. Ikeda - *Toyota Technological Institute, Japan*
K. Nambu - *Osaka Sangyo University, Japan*
M. Yoshida, J. Miyamoto - *Daido University, Japan*
- 9:10 [HT_046] Low pressure carburizing of forged steels: impact on the product and on the process**
E. Morgano - *Silco, Rivalta Torino, Italy*
- 9:30 [HT_033] Optimized compound layer design for highly loaded nitrided gears**
A. Sitzmann, T. Tobie, K. Stahl - *Gear Research Center (FZG), Germany*
M. Sommer, R. Fechte-Heinen, S. Hoja - *Leibniz-Institut für Werkstofforientierte Technologien (IWT), Germany*
- 9:50 [HT_031] Effect of low temperature carburising on corrosion and mechanical behaviour of AISI 304 austenitic stainless steel after hydrogen uptake**
X. Qin - *Chalmers University of Technology, Gothenburg, Sweden and Central South University, Changsha, China*
A. Bauer - *Bodycote Specialist Technologies GmbH, Landsberg, Germany*
L. Nyborg, E. Tam, Y. Cao - *Chalmers University of Technology, Gothenburg, Sweden*
H. Liu - *Central South University, Changsha, China*
- 10:10 [HT_035] Prediction of nitriding parameters, phenomenological modeling and artificial intelligence**
P. Razafimahefa - *HESAM University, France and IRT M2P, Metz, France*
L. Barrallier, S. Jégou, - *HESAM University, France*
R. Marin, O. Skiba - *IRT M2P, Metz, France*
D. Herisson - *SAFRAN Tech, Châteaufort, France*
R. Guiheux - *SAFRAN Transformation System, Colombes, France*
- 10:30 coffee break**

SCIROCCO – LIBECCIO ROOM
TUESDAY, 30 MAY 2023

TUESDAY, 30 MAY 2023
SCIROCCO – LIBECCIO ROOM

NITRIDING AND CARBURIZING II

Chairperson: Donato Firrao

11:00 [HT_025] High temperature gas nitriding of grain-oriented silicon-iron based alloys
F. Delarbre - HESAM University, France and thyssenkrupp Electrical Steel, France
S. Jégou, L. Barrallier - HESAM University, France
M. Teodorescu - thyssenkrupp Electrical Steel, France

11:20 [HT_040] A simple model for hardness and retained austenite profiles prediction for carburized, quenched and tempered low-alloy steels
S. Thibault, P-E. Dubois - NTN Europe, France

SPECIAL PROCESSES FOR SURFACE HARDENING

Chairperson: Donato Firrao

11:40 [HT_051] Different mechanical surface treatment for fatigue life improvement and surface performance optimization for EV components
D. Mangherini - Stellantis, Torino, Italy

12:00 [HT_020] Electron beam hardening of nanobainitic steels
P. Śliwiński, M. St. Węglowski, J. Piśula - Łukasiewicz Research Network-Upper Silesian Institute of Technology, Gliwice, Poland
T. Tański, A. N. Wieczorek - Silesian University of Technology, Gliwice, Poland
E. Skołek - Warsaw University of Technology, Poland

12:20 [HT_037] Use of niobium and molybdenum for steel devoted to surface induction treatment
T. Picot, V. Smanio - ArcelorMittal Maizieres Research, France
P. Lalley - CBMM Europe, Netherlands

12:40 [HT_017] Investigation of combined surface treatments and coatings to increase the wear behavior of heat treatable steels
S. Hoja, N. Haupt - Leibniz Institut für Werkstofforientierte Technologien IWT, Bremen, Germany
R. Baustert - Universität Bremen, Germany
H. Hasselbruch - Oerlikon Friction Systems GmbH, Bremer, Germany
M. Steinbacher, R. Fichte-Heinen - Leibniz Institut für Werkstofforientierte Technologien IWT, Bremen, Germany and MAPEX Center for Materials and Processes, Universität Bremen, Germany

13:00 lunch

COATINGS I

Chairpersons: Silvia Roggero - Chiara Soffritti

- 14:00** [HT_028] Improvement of PVD coatings adhesion by implemented in-situ cleaning in the arc cathodic PVD process
S. Roggero - F G GRUPPO, Caselette, Italy
C. Galamand - GaMa Concept, Royas, France
A. Messer - Alliance Concept-Cran-Gevrier, France
- 14:20** [HT_011] Effect of nanodiamonds concentration on the deposition mechanism of electroless Ni-B-nanodiamond composite coatings
S. Yazdani, V. Vitry - University of Mons, Belgium
- 14:40** [HT_005] Effect of the microstructure of the substrate on PEO coatings produced on AISi10Mg alloy obtained by laser powder bed fusion
L. Pezzato, C. Gennari, M. Franceschi, K. Brunelli - Università di Padova, Italy
- 15:00** [HT_018] Potentials and limitations of surface treatments and their combinations for improving tribological and/or corrosive load behaviour for cast irons
A. Buchwalder - University of Applied Sciences and Arts Northwestern Switzerland
- 15:20** [HT_054] Effects of heat treatment on wear resistance of 17-4PH stainless steel fabricated by direct energy deposition
C. Morales, C. Soffritti, A. Fortini, M. Merlin - Università di Ferrara, Italy
- 15:40** coffee break

SCIROCCO – LIBECCIO ROOM
TUESDAY, 30 MAY 2023

TUESDAY, 30 MAY 2023
SCIROCCO – LIBECCIO ROOM

COATINGS II

Chairperson: Luca Pezzato

- 16:10** **[HT_034]** Transient liquid phase bonding using local electron beam treatment
K. Kerber, P. Hengst, H. Biermann - *Technical University Bergakademie Freiberg, Germany*
A. Buchwalder - *University of Applied sciences and arts Northwestern, Switzerland*
- 16:30** **[HT_021]** The use of copper-germanium brazing alloys - Joining of refractory metals to copper
M. Biglari, L. Vervoorn, A. Miles, E. Brom, Co. van Veen, A. Kodentsov - *Mat-Tech BV, The Netherlands*
- 16:50** **[HT_002]** Laser cladding of tool steel coating on copper alloy substrate via an IN718 buffer
Z. Zhao, P. Bosetti, M. Pellizzari - *Università di Trento, Italy*
M. Perini - *PROM Facility, Italy*
- 17:10** **[HT_007]** Surface quality improvement of hot strip mill looper rolls by a new Ni-based coating
M. Hajhashemi, S. Davood Ghafghazi, F. Farhadi Amineh - *Mobarakeh Steel Company (M.S.Co), Isfahan, Iran*
- 17:30** **[HT_139]** New TripleHard coating – a cost efficient and sustainable alternative to Cr (VI) and beyond
O. Jahkola - *Savroc, Ltd., Kuopio, Finland*
- 17:50** End of the second day

19:30 **SOCIAL EVENT AT GENOVA'S AQUARIUM**

EXHIBITORS TECH TALKS

Chairperson: Antonio De Sario

- 14:00** **[HT_053]** Efficiency of heat treatments with automatic plant
I.C.M.I., Cisano Bergamasco, Italy
- 14:15** **[HT_058]** Integration of an Air Liquide cryogenic treatments solution in automatic production lines
A. M. Jamli, D. De Feo - Air Liquide, Milano, Italy
- 14:30** **[HT_059]** Electric heating beyond environmental benefits
P. Buzzi - Gefran, Provaglio d'Iseo, Italy
- 14:45** **[HT_075]** Quaker Houghton sustainable solutions for heat treatment
M. Dulac - Quaker Houghton, Italy
- 15:00** **[HT_072]** 4.0 Smart Hardness Testing on middle-big size forged pieces
S. Piazza, Renato Affri - EASYDUR, Italy
- 15:15** **[HT_113]** CLIN™ Technologies: HEF Groupe sustainable solutions for Nitrocarburizing
HEF Group, France
- 15:30** **[HT_170]** Benefits of FEM Modelling for efficient and sustainable heat treatments
S. Andrietti - Transvalor, France
- 15:45** **coffee break**

EXHIBITIONS AREA
TUESDAY, 30 MAY 2023

TUESDAY, 30 MAY 2023
EXHIBITIONS AREA

HEAT TREATMENT OF LIGHT ALLOYS

Chairperson: Annalisa Fortini

- 16:10** **[HT_026] Distortion control of aluminum during heat treatment**
D. S. MacKenzie - *Quaker Houghton, Inc., USA*
- 16:30** **[HT_027] Investigation of martensitic transformations in Ti-Nb-Zr-O alloys: experiments and alloy design**
K.G.S. Souza, K. Pantleon, T.L. Christiansen, M. Villa - *Technical University of Denmark*
M. Pellizzari - *Università di Trento, Italy*
R. Caram Jr. - *University of Campinas, Brazil*
- 16:50** **[HT_032] Improved hardenability of aluminum components by associating reliable quenchant characterization with efficient digital simulations**
P. Lasne, M. Moreno - *Transvalor, France*
J. Barlier, S. MacKenzie - *Quaker Houghton, USA*
- 17:10** **[HT_008] Effect of cooling rate during heat treatments on the cyclic behavior and fatigue damage of 2017A aluminum type alloy**
A. Belattar, H. Lakrouit - *AMC, Algérie*
A. May - *EMP, Algérie*
- 17:30** **[HT_013] Solution treatment temperature influence on microstructural and mechanical properties of a cold-rolled Ti-Nb-Zr-Ta-Sn-Fe alloy**
V.D. Cojocaru, A. Dan, N. Serban, N. Zarnescu-Ivan and E.M. Cojocaru - *University Politehnica of Bucharest, Romania*
- 17:50** **End of the second day**

19:30 **SOCIAL EVENT AT GENOVA'S AQUARIUM**

HEAT TREATMENT OF IRON AND STEEL I

Chairperson: Massimo Pellizzari

- 8:40 **[HT_016]** Comprehensive analysis on Quenching and Partitioning on a 30MnV6 microalloyed steel
M. Belfi, S. Barella, A. Gruttadauria, J. Teixeira Oliveira de Menezes, E. Castrodeza, C. Mapelli - *Politecnico di Milano, Italy*
- 9:00 **[HT_029]** Effect of thermal ageing at 475°C on corrosion properties of UNS S32101 duplex stainless steel
M. Pigato, C. Gennari, E. Simonetto, I. Calliari - *Università di Padova, Italy*
- 9:20 **[HT_036]** Strength-plasticity relationship depending on retained austenite – martensite ratio in intercritically annealed medium-Mn steel
A. Grajcar, A. Skowronek - *Silesian University of Technology, Poland*
- 9:40 **[HT_045]** Characterization of bainitic microstructure of HTCS-130 hot-work tool steel
A. Bajželi, J. Burja - *Institute of Metals and Technology, Ljubljana, Slovenia and University of Ljubljana, Slovenia*
B. Š. Batič - *Institute of Metals and Technology, Ljubljana, Slovenia*
- 10:00 **[HT_041]** Effect of quenching parameters on microstructure and heat treatment distortions of bearing steels: an industrial investigation
L. Bocchi, A. Fortini, M. Merlin - *Università di Ferrara, Italy*
E. Bertarelli - *Timaf, Piacenza, Italy*
- 10:20 **[HT_023]** Alloy effects and metallurgical functionalities in steels for direct quenching
H. Mohrbacher - *NiobelCon BV, Belgium*
- 10:40 **[HT_057]** Efficient modelling of quenching processes via CFD
P.E. Ramirez Lopez - *Swerim AB, Sweden and KKTH Kungliga Tekniska Högskolan, Sweden*
A. Sundström, S. Häglund - *Swerim AB, Sweden*
H. Kristoffersen, E. Troell - *RISE/IVF, Sweden*
A. Olofsson - *Advanced Engineering Transmission Production, DXTGR; Scania CV AB*
- 11:00 coffee break

SCIROCCO – LIBECCIO ROOM
WEDNESDAY, 31 MAY 2023

WEDNESDAY, 31 MAY 2023
SCIROCCO – LIBECCIO ROOM

HEAT TREATMENT OF IRON AND STEEL II

Chairperson: Marco Belfi

- 11:30 [HT_022] Oxide scale modelling on low carbon steels: kinetics characterization and failure prediction during hot-deformation processes**
M. Moreno, P. Lasnes - *Transvalor S.A, France*
- 11:50 [HT_039] A model to predict the mechanical properties of hardened and tempered low-alloy steel**
C. M. Belardini, R. Valentini - *Università di Pisa, Italy*
L. Bacchi - *Letomec, Pisa, Italy*
A. Zaccara, A. Petrucciani, V. Colla - *Scuola Superiore Sant'Anna, Pisa, Italy*
- 12:10 [HT_004] Optimal shape design using response surface method to reduce heat treatment deformation**
K. Nambu - *Osaka Sangyo University, Japan*
K. Shiraki, M. Okumiya - *Toyota Technological Institute, Japan*
- 12:30 [HT_003] Effect of ausforming temperature and strain on the bainitic transformation**
M. Franceschi, L. Pezzato, M. Dabalà - *Università di Padova, Italy*
- 12:50 [HT_048] Effect of microalloying on tempering of Mo-W high thermal conductivity steel**
J. Burja - *Institute of Metals and Technology, Ljubljana, Slovenia*
A. Nagode, J. Medved, T. Balaško - *University of Ljubljana, Slovenia*
K. Grabnar - *Beni Tehing d.o.o., Štore, Slovenia*
- 13:10 [HT_012] Microstructural and mechanical characterization of isochronal solution treated UNS S32750 / F53 / 1.4410 Super Duplex Stainless Steel (SDSS) alloy**
E.M. Cojocaru, D. Raducanu, N. Serban, N. Zarnescu-Ivan, V.D. Cojocaru - *University Politehnica of Bucharest, Romania*
- 13:30 Conclusions and end of the Conference**

NOTE OF THE PROGRAMME Possible changes to the programme will be communicated during the Conference



AUTOMATIC HEAT TREATMENT PLANT FOR PIPES

CERTIFIED PROCESS ACCORDING TO API6HT & NORSOK M-650



- **CERTIFICATION ACCORDING TO API6HT & NORSOK M-650**
Temperature uniformity $\pm 7^{\circ}\text{C}$
- **LOAD TYPE:**
Steel pipe of various alloys
- **LOAD DIMENSIONS:**
Diam. 2540mm x Max length 6500mm
- **LOAD WEIGHT:** 16000kg.
- **QUENCHING TIME:**
Less than 60 s from closed door to complete immersion of the maximum load in the tank.

*I.C.M.I. Industrial Furnaces designs and manufactures **automated and customized heat treatment lines** in the areas of steel, special alloys and aluminum. Furnaces, loading machines, cooling chambers, tanks, stirring systems, descenders, quenching heads, are coordinated for the service of integrated processes*



CONFERENCE VENUE

The Conference will be held in in Genova, at Magazzini del Cotone
(<https://portoantico.it/en>)

Genova sits in a prime location, which encompasses the waterfront, centre and port. The city has always been a place of exchange, gatherings, trade and invention, and it is among the most musical Italian cities in terms of the number of musicians and singer-songwriters born and bred there. It offers an endless array of gastronomic specialities, imitated all around the world

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

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
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The transfer order must specify the name of the participant and the reference "ECHT 2023".
A copy of the transfer order must be sent to AIM, together with the Registration Form.
- by credit card online (<https://www.aimnet.it/echt2023.htm>)

Registration Information

REGISTRATION FEES

ALL BELOW REGISTRATION FEES ARE REVENUE STAMP INCLUDED

MEMBER

(AIM - CICOF - FEDERTEC - UPIVIB)

	LATE AND ON-SITE From May 13, 2023
DELEGATE (NON-PRESENTER)	€ 790,00
SESSION CHAIRPERSON - COMMITTEE MEMBER - SPEAKER	€ 570,00
EXHIBITORS / SPONSORS	€ 750,00

NON-MEMBER

	LATE AND ON-SITE From May 13, 2023
DELEGATE (NON-PRESENTER)	€ 890,00
SESSION CHAIRPERSON - COMMITTEE MEMBER - SPEAKER	€ 670,00
EXHIBITORS / SPONSORS	€ 850,00

STUDENT VAT INCLUDED (Students will have to provide valid proof of student status)

STANDARD By May 12, 2023	€ 540,00	LATE AND ON-SITE From May 13, 2023	€ 590,00
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Conference Registration Fees include:

- ✓ ADMITTANCE TO TECHNICAL SESSIONS AND TO THE EXHIBITION
- ✓ SOCIAL EVENT ON MAY 30, 2023
- ✓ CONFERENCE ELECTRONIC PROCEEDINGS
- ✓ COFFEE BREAKS
- ✓ LUNCHES

For non-members (students excluded) the fee includes AIM Membership for the second half of 2023 and for the year 2024.

Additional ticket for Social event for accompanying persons: € 90 (plus 22% VAT) - (includes only the social event on May 30)

REGISTRATION FEES

SPEAKERS REGISTRATION

Please be aware that only papers submitted on time and with presenting author regularly registered (registration fee paid) **before March 31, 2023** 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 March 31, 2023**. For speakers who notify their cancellation **after March 31, 2023** 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.

ADVANCED REGISTRATION

If you plan to attend, please register online on the Conference website <https://www.aimnet.it/echt2023.htm> or fill in the enclosed Registration Form and send it to the Organising Secretariat best **before March 31, 2023** (early-bird registrations deadline). Please use a separate form for each participant. Please contact the Organising Secretariat by e-mail, if possible.

CANCELLATION AND REFUND POLICY

A refund, less 20% deduction for administrative costs, will be issued for written cancellations received **by March 31, 2023**. For attendees who notify their cancellation after March 31, 2023 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.

EXHIBITION CATALOGUE >>[LINK](#)

HOTEL ACCOMMODATION

CBG Convention Bureau Genova

Tel. +39 0105761975 - email: info@cbgenova.it

SOCIAL PROGRAMME

A social program has been designed to give delegates the opportunity to meet informally and enjoy Genova's atmosphere.

A Welcome aperitif and free visit to Genova's aquarium will be organized in the evening of May 30, 2023, starting **at 19.30**.

Following a seated dinner will be served in the dolphins rooms.

Dress code: business attire is recommended.

Acquario di Genova is the largest Aquarium in Europe and hosts the most extensive range of aquatic biodiversity in Europe. The exhibition gallery consists of over 70 exhibits and about 12,000 specimen of 600 species, from all the seas of the world. From the rarest species such as manatees – marine mammals that may be at the origin of the legend of mermaids – to the most famous ones such as dolphins, penguins and sharks – the great predators of the sea; but also jellyfish, seals and multi-coloured tropical fish species.

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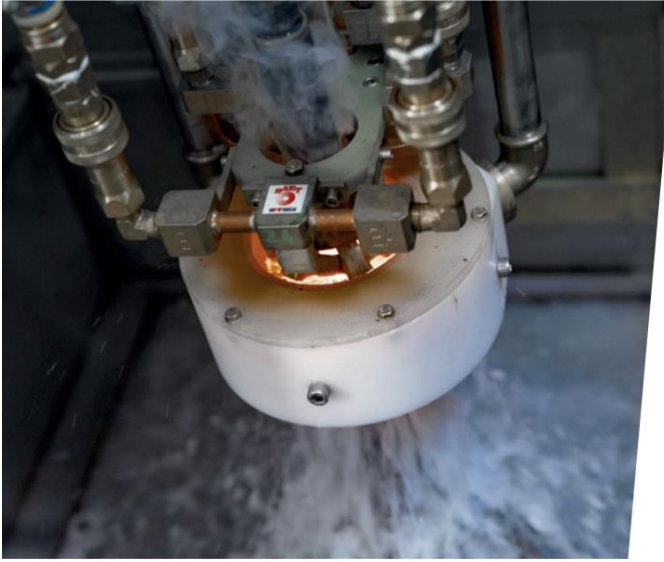
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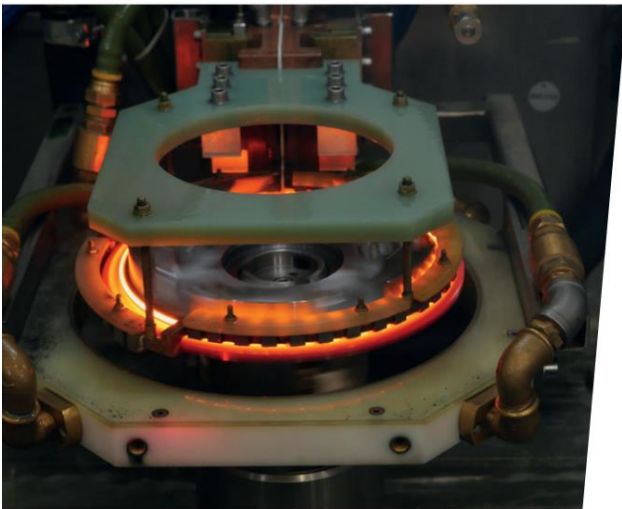
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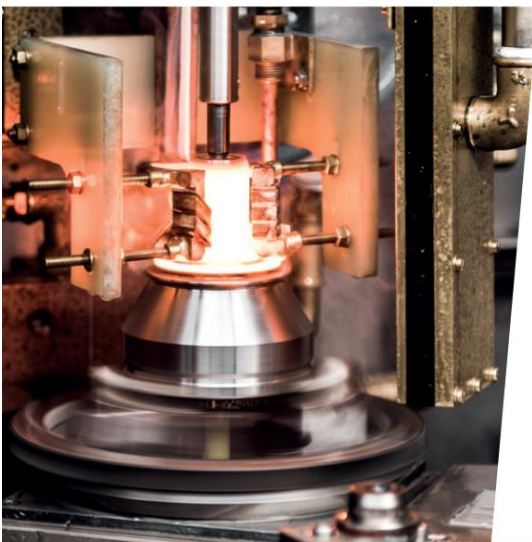


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via F. Turati 8 - 20121 Milano - Italy - phone: +39 0276021132 - e-mail: aim@aimnet.it - website: www.aimnet.it

CONFERENCE REGISTRATION FEES INCLUDE: • ADMITTANCE TO TECHNICAL SESSIONS AND TO THE EXHIBITION • SOCIAL EVENT ON MAY 30 •
CONFERENCE ELECTRONIC PROCEEDINGS • COFFEE BREAKS • LUNCHES

TO REGISTER PLEASE FILL-IN THE FOLLOWING REGISTRATION FORM IN ALL ITS PARTS.

(IT IS ALSO POSSIBLE TO REGISTER ONLINE - <https://www.aimnet.it/echt2023.htm>)

PERSONAL DATA

Please use **BLOCK** letters throughout form

FAMILY NAME _____
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Codice destinatario _____

REGISTRATION FEES

MEMBER (AIM - CICOF - FEDERTEC - UPIVIB)	DELEGATE (NON-PRESENTER)	SESSION CHAIRPERSON COMMITTEE MEMBER SPEAKER (PRESENTER)	EXHIBITORS SPONSORS	STUDENT FEE (VAT INCLUDED) (*)
LATE AND ON-SITE From May 13, 2023	MEMBER € 790,00 NON MEMBER € 890,00	MEMBER € 570,00 NON MEMBER € 670,00	MEMBER € 750,00 NON MEMBER € 850,00	€ 590,00

ALL ABOVE REGISTRATION FEES ARE REVENUE STAMP INCLUDED (*) Students will have to provide valid proof of student status.

☐ **Additional ticket for Social event for accompanying persons:** € 90 (plus 22% VAT) - (includes only the social event on May 30)

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 BACRIT22MIL. The transfer order must specify the name of the participant and the reference "**ECHT 2023**". A copy of the transfer order must be sent to AIM, together with the Registration Form.

☐ by credit card online <https://www.aimnet.it/echt2023.htm>

☐ 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:
- to insert my name in the list of event participants:

☐ yes ☐ no
☐ 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 Mr. Silvano Panza (hereinafter the "Data Controller"), current in Milan, via F. 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.aimnet.it

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.aimnet.it, 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. 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.

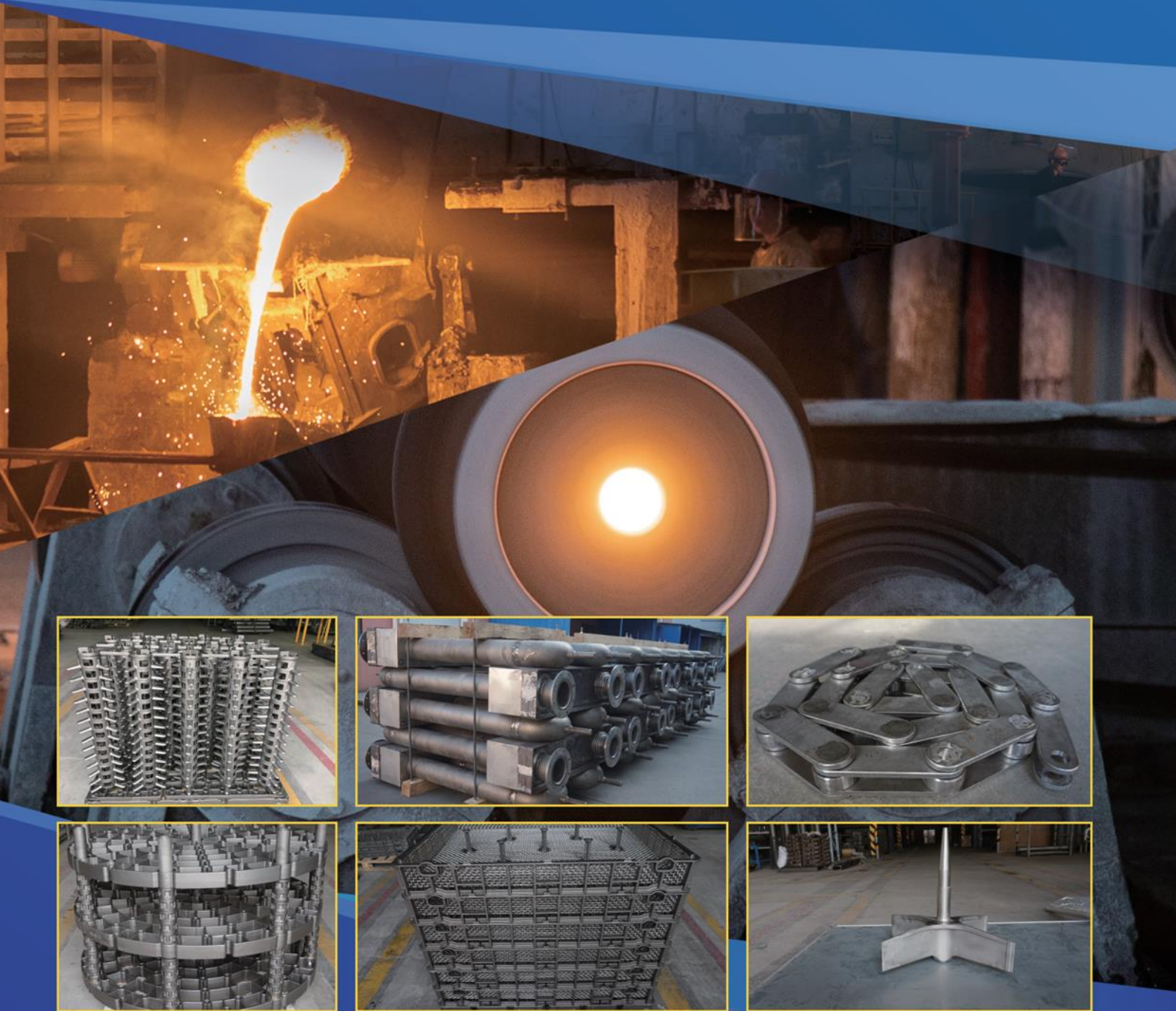
8. Data Controller and person in charge.

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

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

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TIMETABLE

Monday, 29 MAY 2023

SCIROCCO – LIBECCIO ROOM

9:45	ATTENDEES REGISTRATION
10:50	OPENING SESSION: HEAT TREATMENT & SUSTAINABILITY
13:00	LUNCH
14:20	INDUSTRIAL EQUIPMENT & PROCESSES
16:00	COFFEE BREAK
16:30	HEAT TREATMENT FOR ADDITIVE MANUFACTURING
18:10	END OF THE FIRST DAY

Tuesday, 30 MAY 2023

SCIROCCO – LIBECCIO ROOM

8:50	NITRIDING AND CARBURIZING I
10:30	COFFEE BREAK
11:00	NITRIDING AND CARBURIZING II
11:40	SPECIAL PROCESSES FOR SURFACE HARDENING
13:00	LUNCH

SCIROCCO – LIBECCIO ROOM		EXHIBITION AREA
14:00	COATINGS I	EXHIBITORS TECH TALKS
15:40	COFFEE BREAK	
16:10	COATINGS II	HEAT TREATMENT OF LIGHT ALLOYS
17:50	END OF THE SECOND DAY	
19:30	SOCIAL EVENT AT GENOVA'S AQUARIUM	

Wednesday, 31 MAY 2023

SCIROCCO – LIBECCIO ROOM

8:40	HEAT TREATMENT OF IRON AND STEEL I
11:00	COFFEE BREAK
11:30	HEAT TREATMENT OF IRON AND STEEL II
13:30	CONCLUSIONS AND END OF THE CONFERENCE

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Organising Secretariat



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