



RI A

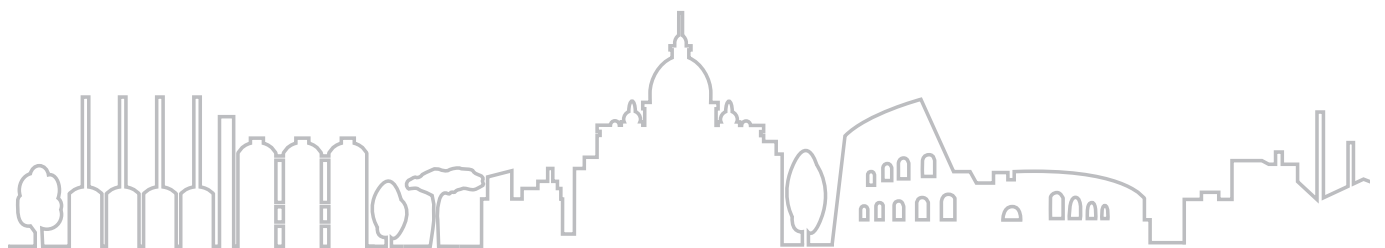
WMI
2020

November 3rd to 5th, 2020 - **Rome, Italy**



ASSOCIAZIONE
ITALIANA
DI METALLURGIA





9th International Conference Magnetism and Metallurgy November 3rd to 5th, 2020 - Rome, Italy

SCOPE OF THE CONFERENCE

The series of International Conferences, Magnetism and Metallurgy was established in 2004 by the Institute of Metal Forming at the Technische Universität Bergakademie Freiberg by the enlightened initiative of Prof. Rudolf Kawalla and Prof. Jurgen Schneider.

WMM conferences take place every two years. The conferences of 2004, 2006, 2010, took place in Freiberg. The editions of 2008 and 2012 took place in Ghent and the last three editions took place respectively in Cardiff, 2014, Rome, 2016, and Dresden 2018. Starting from the 2020 edition, as already announced in Dresden 2018, RINA will be in charge of the organization of WMM series of conferences.

Chairman of the conference will be Dr. Stefano Fortunati together with Prof. Rudolf Kawalla co-chairman of WMM'20. Dr Stefano Cicalè will be the Program Manager.

Prof Jürgen Schneider will continue to actively participate to the organization of WMM '20 conference.

Organised by RINA, the 9th International Conference Magnetism and Metallurgy WMM'20 will take place from November 3rd to 5th, 2020 in Rome, Italy. The consolidated aim of this series of International Conferences on Magnetism and Metallurgy is to bring together scientists from universities and research groups working on the development of magnetic materials, experts from the Industrial companies producing magnetic materials as well as electrical engineers from universities and industry, who are engaged in applications of magnetic materials.

The WMM '20 conference will once again be a forum for the exchange of ideas on the status and further trends between experts from the industry and research institutes. The 9th International Conference WMM '20 in Rome, November 2020, will cover the latest developments, and participants will have the chance to discuss the progress in the field of Magnetism and Magnetic Materials and their Applications. The program will include invited lectures and posters.

All the contributions will be published in a digital book of Conference Proceedings. The participants will receive the digital book of proceedings before the beginning of the conference.

CONFERENCE UPDATE FOR REMOTE ATTENDANCE

In view of the recent Covid19 pandemic trend in Europe and of the new restrictions communicated by the Italian government regarding the organization of public events, the conference organizing committee has been forced to hold the WMM20 conference only on-line and not by the presence in Rome.

Program of Lectures will be kept unchanged and people will be able to follow it by remote connection using the conference digital platform. During the days of the conference, November 3rd-5th, 2020, it will be possible to follow the conference works as well as give speeches and participate to discussions in remote connection around the world.

Similarly, the poster session will be held online with all poster uploaded and viewable as pdf files. A Virtual Poster Room will be available by dedicated remote connection to participants.

Each exhibitor will have an assigned online page where it will be possible to upload files, brochure and it will be able to stream live videos sessions and connect with the attendees through the dedicated chat-room. Virtual Exhibitors Room will be available to remote participants with the chance to "see the the various Exhibitors proposals" and get in contact with the virtual stands holders.

A digital copy of Conference Proceedings will be distributed to each participant before the beginning of the conference.

In the days before the conference each attendee will receive the online platform link where they will need to register and create an account; the day of the event the attendees will need to log in to the conference digital platform and will be able to see the link to the conference live site. The preferred program to view the conference video streaming is Google Chrome.

TOPICS OF THE WMM'20

- Electrical steels and other soft magnetic materials: advances in product quality, new grades, and applications
- Advances in manufacturing methods: metallurgical routes and technological solutions
- Status of the Use of Thin Slab and Thin Strip casting technology for GO and NGO
- Hard magnetic materials: trends in product grades and manufacturing processes
- Progress in modelling the evolution of microstructure and texture along the metallurgical processing route for electrical steels
- Relationships between microstructure and magnetic properties
- Surface quality and coatings development for GO/NGO electrical steel
- Advancement on magnetic materials characterizations
- Progress on modelling the effects of magnetic materials characteristics on the electrical machines performances
- Electrical steels for Electric Mobility applications (E-cars and power supply infrastructures): trends, technical solutions and strategies for development
- Development of Higher Efficient Motors and the role of electrical steels
- Optimum selection of electrical steels for given applications and optimum manufacturing methods

WMM'20 SPECIAL SESSION

As part of WMM'20 conference, in the framework of the Plenary Session, the Organizing Committee has decided to include a "Special Theme Session" titled:

"New Equipment and Technology for production of High Grade Non-Oriented Electrical Steel"

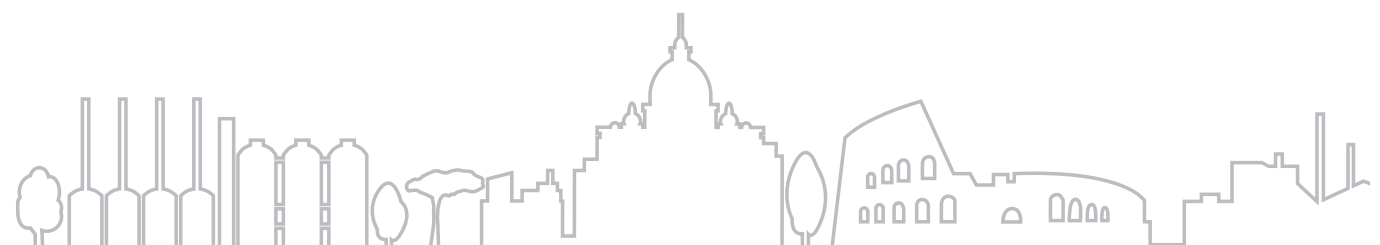
With rapid acceptance of electric vehicles using high grade electrical steels for the motors, together with new energy efficiency requirements for industrial electric motors, the interest by producers and consumers for the production and adoption of top quality grade NOES is significantly growing.

For this reason, we see a very major interest by many ES producers to upgrade both capacity as well as technology to manufacture **high quality NGO grades** and fulfill the more and more challenging users' requirements. In parallel the Industrial Plant Equipment suppliers are working and investing in order to propose **new technological solutions** to fulfill ES producer's needs.

The special session is designed to focus the state of art and innovative solutions to industrial manufacture high quality NGO grades along the main significant phases of their industrial production route.

The special Theme Session in WMM'20 will be approximately 2 ½ hours long, consisting of 5 presentations. The process phases selected in this conference edition will follow the production sequence of:

- Continuous Casting and Hot Rolling
- Hot rolled coil annealing and pickling
- Cold Rolling
- Final Continuous Annealing
- Coating and Coating Equipment



INTERNATIONAL ADVISORY COMMITTEE

Chair of committee

- Prof. Antony Moses, University of Cardiff, United Kingdom
- Prof. Jürgen Schneider, University of Freiberg, Germany
- Prof. Marco Villani, University of L'Aquila, Italy

Members

- Carlo Abbruzzese, RINA, Italy
- Erik Hilinski, Tempel Steel, US
- Indradev Samajdar IIT Mumbai, Indian Institute of Technology - Mumbai, India
- Jong-Tae Park, Posco, Korea
- Kay Hameyer, IEM RWTH Aachen, Germany
- Ludger Lahn, ThyssenKrupp Electrical Steel, ThyssenKrupp Electrical Steel, Germany
- Niklas Volbers, VAC, Germany
- Sebastião da Costa Paolinelli, Aperam South America, Brazil
- Shenglin Chen, BaoWu Iron and Steel Co., China
- Sigrid Jacobs, ArcelorMittal Global R&D, Belgium
- Stefan Siebert, Brockhaus Messtechnik GmbH, Germany
- Steve Sprague, Proto Lam LLC, US
- Fernando Landgraf, Institute of Technological Research (IPT), Brazil
- Yoshiyuky Ushigami, Nippon Steel Sumitomo Metals Corporation, Japan

Conference Chair

- Dr. Stefano Fortunati, RINA, Italy
- Prof. Rudolf Kawalla, Germany

Program Manager

- Dr. Stefano Cicalè, RINA, Italy.

SECRETARIAT OF THE WMM'20

Dr. Elisabetta Amici, RINA

Via di Castel Romano, 100
00128, Rome, Italy
Mob: +39 335 6682147
Email: wmm20@rina.org

Dr. Ing. Cristina Forzanti, RINA

Viale Benedetto Brin 218, Terni
05100 Terni, Italy
P: +39 0744487306
Email: wmm20@rina.org

CONFERENCE WEBSITE

All the information about WMM20 can be found on the conference website.
<https://www.rina.org/en/wmm20>

REGISTRATION FEES

The registration fee include a digital copy of the Conference Proceedings.

- Conference attendance (on-line): **450 EUR**
- Conference attendance for PHD students (on-line): **350 EUR**

For registration you are kindly asked to complete the registration form that can be found in the conference website. Once the registration is complete, the attendees will receive, a few days before the conference, the link to log into the conference digital platform.

POSTERS AND EXHIBITS

The papers should be uploaded in the conference website and will be submitted to the program manager that will inform applicants on their acceptance.

Virtual Posters Room: posters will be uploaded in a dedicated section of the conference website for the attendees in remote connection; a dedicated chat-room will be provided to allow online attendees to interact with poster authors.

Virtual Exhibitors Room: available to remote participants with the chance to explore the various stands and get in contact with the stand holders. Each exhibitor will be able to stream live videos sessions and connect with the attendees through a dedicated chat-room.

PROGRAM

The WMM'20 is planned to start at 9.30 AM of November 3rd, 2020 and to close at 18:00 PM of November 5th 2020. Secretary will be open for on-line registration throughout the entire conference.

A devoted Technical staff will be available throughout the conference to help on-line participants.

A "Virtual Tour" of the RINA Labs is proposed, the main labs will be presented, and an expert will show the most important equipment and describe the testing facilities. The on-line connection will be registered, and videos will be available in streaming.

TIME ZONES

In order to allow registered users with different time zones to follow the entire conference, it will be possible to review the recorded video of the presented lectures of the invited speakers who have given their consent (deferred viewing), in a special protected digital area reserved only for WMM20 registered users.

New York



07:00 AM

Brasilia



08:00 AM

Rome



12:00 PM

New Dheli



04:30 PM

Beijing



07:00 PM

Conference Program

3rd November 2020

- 09,30 - 10,00 **Opening remarks**
- 10,00 - 10,30 High performance Synchronous Reluctance motor for electric vehicles: comparison between NGO and GO electrical steels
Marco Villani, University of L'Aquila
- 10,30 - 11,00 Bonded Magnets: developments in the field of material grades (e.g. new grades by improved processes, Cerium containing materials) and magnetization design improvements
Nimitkumar Sheth, Magnequench GmbH
- 11,00 - 11,30 CoilMap - Continuous monitoring of local variations in magnetic properties across the material width and length of electrical steel coils
Stefan Siebert, Dr. Brockhaus Messtechnik GmbH and Co. KG
- 11,30 - 12,00 Electromagnetic materials suited for electrified transport
Sigrid Jacobs, Arcelor Mittal global R&D
- 12,00 - 12,30 New developments of BAO STEEL in the field of Grain Oriented Electrical Steel
Liu Xian Dong, BAOSTEEL Europe Technical Service Center
- 12,30 - 13,00 Overview of SMC characterization for their adoption in electromechanical systems
Luca Ferraris, Politecnico di Torino
- 13,00 - 14,00 **Break**
- 14,00 - 14,30 Investigations on microstructural reasons for Goss texture formation in GO electrical steels - a search for the needle in the haystack
Stefan Zaefferer, Max-Planck-Institut fuer Eisenforschung
- 14,30 - 15,00 Innovative Methods of Texture Control in the Manufacturing of Non-Oriented Electrical Steels
Leo Kestens, University of Gent
- 15,00 - 15,30 Comparative analysis between Glue Fastec®, conventional fastenings and housing compression effect in electric motor core losses
Mario Villalon, Eurogroup
- 15,30 - 16,00 A review of the concept and results of hysteresis loss subdivision into Low and High induction components
Fernando Landgraf, Universidade de São Paulo
- 16,00 - 16,30 **Posters & Exhibitors session**
- 16,30 - 18,00 **Virtual Tour to RINA Laboratories**

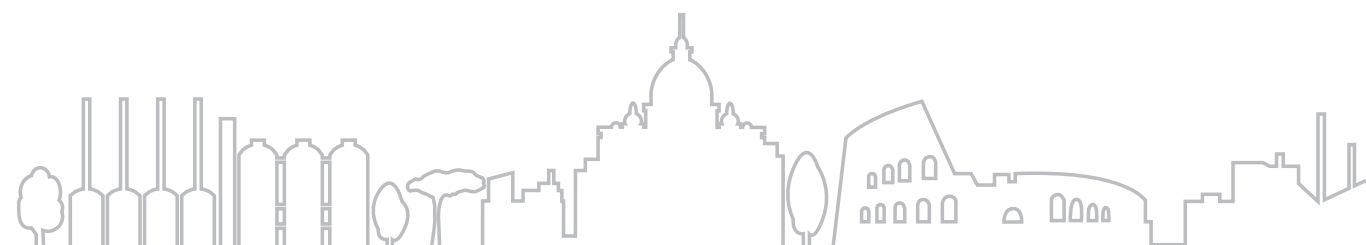
4th November 2020

- 08,30 - 09,00 Recent Development of Grain-Oriented Electrical Steel at Nippon Steel Corporation
Takashi Kataoka, Nippon Steel Corporation
- 09,00 - 09,30 Metallurgical Model of HTCA for GO Silicon Steel including prevision of Magnetic Properties (B800) and Secondary Grain Size (MOGOCA-EVO)
G. Carlo Abruzzese, Spires
- 09,30 - 10,00 Microstructural Origin of Goss (110)<001> Grains in Hot Rolled Grain Oriented and Non-Grain Oriented Silicon Steel
Indradev Samajdar, Indian Institute of Technology-Mumbai
- 10,00 - 10,30 **Break**
- 10,30 - 11,00 **Posters & Exhibitors session**
- Special Session:**
- 11,00 - 11,30 QSP-DUE - Danieli's ultimate technology for non-oriented electrical steel production
Christian Bilgen, Danieli Germany GmbH
- 11,30 - 12,00 Innovative solutions for Continuous Cold Rolling and Annealing & Pickling Line of high-quality NGO-ES grades
Stefano Luperi, RINA

- 12,00 - 12,30 Cold rolling technologies for successful production of NGO thin-gauge electrical steels
Konrad Krimpelstaetter, *Primetals*
- 12,30 - 13,00 Advanced Heat Treatment Lines for Production of NGO Electrical Steel
Christian Wuppermann, *TENOVA LOI THERMOPROCESS*
- 13,00 - 13,30 Coatings and Coating Equipment for High Grade NGO Electrical Steels
Johann Schellenberg, *REMBRANDTIN*
- 13,30 - 14,30 **Break**
- 14,30 - 15,00 Evolution of Microstructure and Texture for ES Non-Grain Oriented (NGO) vs Grain Oriented Electrical Steels (GO) - Part 1: NGO
Jürgen Schneider, *University of Freiberg*
- 15,00 - 15,30 Evolution of Microstructure and Texture for ES Non-Grain Oriented vs Grain Oriented Electrical Steels Part 2: GO
Stefano Fortunati, *RINA*
- 15,30 - 16,00 New Trends in the Amorphous and Nanocrystalline Soft Magnetic Ribbon Market
Eric Theisen, *Metglas*
- 16,00 - 16,30 **Break**
- 16,30 - 17,00 **Posters & Exhibitors session**
- 17,00 - 17,30 Adhesive bonding of laminations
Erik Hilinski, *Tempel*
- 17,30 - 18,00 Electrical Steel market status and vision for the future
Gwynne Johnston, *Metals Technology Consulting*

5th November 2020

- 08,30 - 09,00 Research Development on Preparation of Fe-6.5%Si Steel Strip by Near-net Shape Technology
Shenglin Chen, *Wuhan Iron and Steel Co*
- 09,00 - 09,30 The development of strip casting electrical steel
Guo Yuan, *Northeastern University*
- 09,30 - 10,00 Demand and New Development of High-grade NGO material of China
Lin Cheng, *Shougang*
- 10,00 - 10,30 **Break**
- 10,30 - 11,00 **Posters & Exhibitors session**
- 11,00 - 11,30 Infrared drying technology to GO and NGO electrical steel production
Boris Meary, *Solaronic*
- 11,30 - 12,00 Smart solutions for ECO-Design Oil Distribution Transformers
Franco Marini, *SIM*
- 12,00 - 12,30 Electrical steel and high torque density motors performances, role of lamination grade and thickness
Mircea Popescu, *Motor Design Limited*
- 12,30 - 13,00 Low thickness NGO FeSi Electrical Steel for high frequency automotive application
Fiona Robinson, *Cogent Power*
- 13,00 - 13,30 Soft magnetic materials for highest power densities and related part production technologies
Niklas Volbers, *Vacuumschmelze*
- 13,30 - 14,00 **Closing remark**



INDUSTRIAL SPONSORS

MATERIALS AND SERVICES

Euro Group S.p.A.

Eurotranciatura Mexico

TECHNOLOGY AND EQUIPMENT

Primetals

Tenova LOI Thermoprocesses

Rembrandtin

Castellini Officine Meccaniche

EXHIBITORS

Coiltech	www.quickfairs.net
----------	--

Brockhaus	www.brockhaus.com/measurements/about-bmt
-----------	--

G-Iron	www.g-iron.it
--------	--

Elkem	www.elkem.com
-------	--

Università degli Studi dell'Aquila	www.univaq.it
------------------------------------	--

R13 technology	www.r13technology.it
----------------	--

LCD laser cut	www.lcd-lasercut.ch/DE/Home.html
---------------	--

Axalta	www.axalta.com/corporate/en_US.html
--------	--

Stiefelmayer Lasertechnik	www.stiefelmayer-lasertechnik.de/lasertechnik/startseite.html
---------------------------	--

Innovent	www.innovent-jena.de
----------	--

Ebner	https://www.ebner.cc/en/home/
-------	---

Castellini Officine Meccaniche	www.castellini.it
--------------------------------	--

RINA	www.rina.org
------	--

Arcanum Alloys	www.arcanumalloys.com
----------------	--

MEDIA PARTNER

Webcom Communications Corporation	www.magneticsmag.com
-----------------------------------	--

PROCEEDINGS

The WMM'20 proceedings digital book including all the papers from invited speakers and posters will be distributed to each participant before the beginning of the conference.

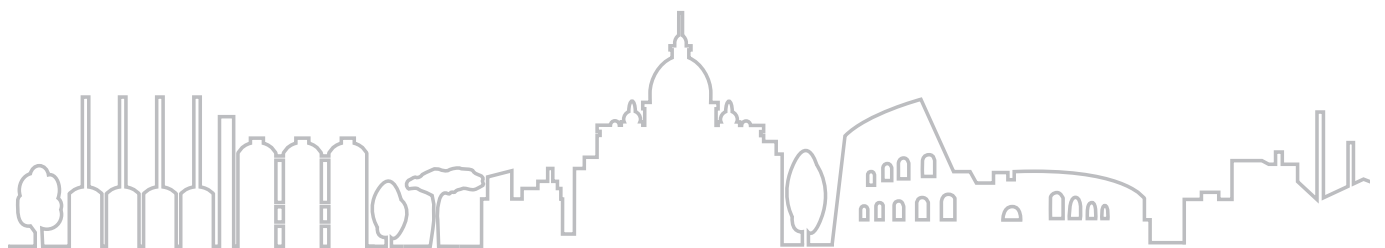
CONFERENCE VENUE

The 9th International Conference Magnetism and Metallurgy WMM'20 will take place in Rome at:

Hotel NH Roma Villa Carpegna

**Via Pio IV, 6
00165 Rome, Italy
T. +39 06 393731
nhvillacarpegna@nh-hotels.com
<https://www.nh-hotels.com/hotel/nh-romavilla-carpegna>**

RAFFAELLO PLENARY ROOM devoted to the management of on-line conference sessions.





wmm20@rina.org
rina.org