



# WMM '20

November 3<sup>rd</sup> to 5<sup>th</sup>, 2020 - Rome, Italy



ASSOCIAZIONE  
ITALIANA  
DI METALLURGIA

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# WMM '20



November 3<sup>rd</sup> to 5<sup>th</sup>, 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 3<sup>rd</sup> to 5<sup>th</sup>, 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 book of conference proceeding. The participants will receive the book of proceedings at the conference site.

## 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

## 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
- Yoshiyuki 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.

### WMM'20 Important Dates

- Abstract Submission [03.07.2020](#)
- Registration (early bird) [31.07.2020](#)
- Manuscripts Submission [03.08.2020](#)

## 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](mailto:wmm20@rina.org)

### Dr. Ing. Cristina Forzanti, RINA

Viale Benedetto Brin 218, Terni  
05100 Terni, Italy  
P: +39 0744487306  
Email: [wmm20@rina.org](mailto: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 includes conference proceeding, refreshments, lunches, welcome dinner on the first day as well as a social program and conference dinner on the second day.

- Conference attendance early bird: **650 EUR**  
(up to 31.07.2020)
- Conference attendance: **750 EUR**  
(after 31.07.2020)
- Exhibitors: **2500 EUR**  
(conference fee + exhibition space fee)
- Conference attendance for PHD students (no social program): **350 EUR**
- Social Event participation for Accompanying person or PHD student: **100 EUR**  
Including social program and conference dinner for second day only
- Social Event participation for Accompanying person or PHD student: **150 EUR**  
Including social program and conference dinner for first and second day

For registration you are kindly asked to complete the registration form that can be found in the conference website.

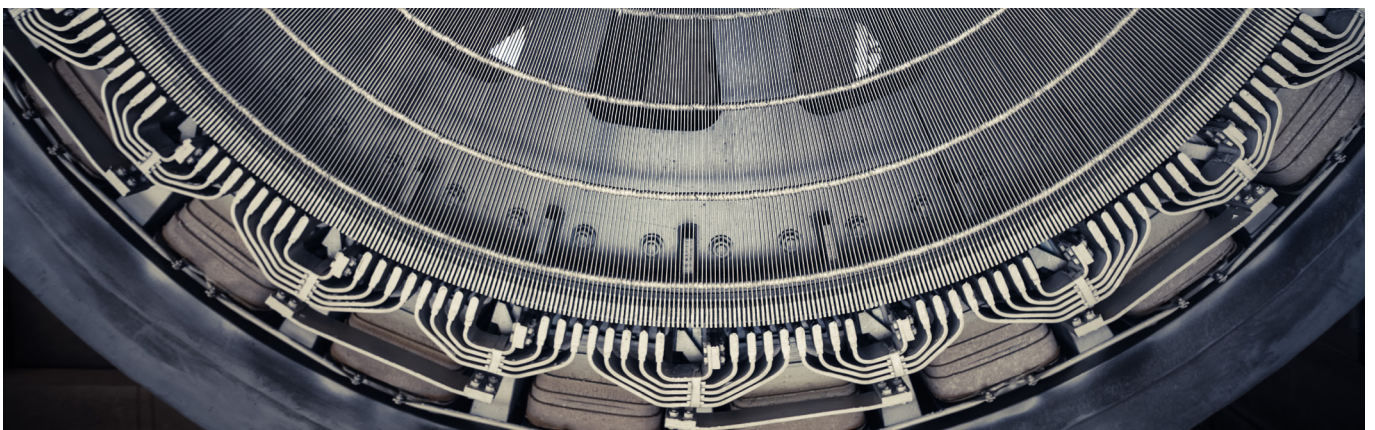
## POSTERS AND EXHIBITS

WMM'20 will include a limited number of exhibits and poster papers. Preference will be given to posters presenting R&D results on materials technologies and/or devices. Authors of posters can present a paper of up to 15 pages that strictly follows the template and guidelines provided in the conference website. The papers should be uploaded in the conference website and will be submitted to the program manager that will inform applicants on their acceptance.

- POSTER SIZE DIMENSIONS: 0.7m (l) x 1 m (h). Panels to attach the posters will be provided at the conference
- EXHIBIT SPACE: table 1.80m x 0.70 m, two chairs, electric outlet for a maximum of 1 kw each. If there are different needs, possible supplement will be evaluated. Exhibitor roll-up or banner are well accepted

## PROGRAM

The WMM'20 is planned to start at 10:00 AM on November 3rd 2020 and to close at 5.00 PM of Thursday November 5th 2020. Secretariat will be open for registration from the afternoon of November 2nd 2020 and throughout the entire conference. On the first day in the evening there will be the opportunity to visit the research facilities, laboratories and pilot plants of RINA in Castel Romano (Rome), where a welcome buffet dinner will be offered.



## LIST OF INVITED SPEAKERS

NAME	AFFILIATION	SUBJECT FOR LECTURE	STATE
Dr. Ludger Lahn	Thyssenkrupp Electrical Steel	Developments in GO products	Germany
Dr. Stefan Zaefferer	Max-Planck-Institut fuer Eisenforschung	Origin of Goss grains in GO steel	Germany
Prof. Leo Kestens	University of Gent	Innovative methods to control texture evolution	Belgium
Prof. Luca Ferraris	Politecnico of Torino	Progress on modelling the effects of magnetic materials characteristics on the electrical machines performances	Italy
Dr. Sebastiao Paolinelli	Aperam South America	GO ES production through steckel mill	Brazil
Prof. Marco Villani	University of L'Aquila	Motor design optimization and role of elecSoft magnetic materials (or Motor design with unconventional Soft Magnetic materials)	Italy
Dr. Mircea Popescu	Motor Design Limited	Electrical steel and Motors performances, role of lamination thickness	Wales-UK
Prof. Indradev Samajdar	Indian Institute of Technology-Mumbai	Texture evolution during processing of GO/NGO strips	India
Dr. Eric Theisen	Metglas Inc	Overview about Amorphous/nanocrystalline materials and their production method recent new developments in Amorphous/ nanocrystalline applications	USA
Dr. Bernd Grieb	Magnequench GmbH	Bonded Magnets: developments in the field of material grades (e.g. new grades by improved processes, Cerium containing materials) and magnetization design improvements	Germany
Dr. Seil Lee	Posco	Final Annealing of NGO ES: effects by the Annealing Conditions on the resulting Microstructure and Texture	South Korea
Mr. Marco Alvelli	G-iron SRL	Shielding of low frequency EM fields	Italy
Dr. Shenglin Chen	Wuhan Iron and Steel Co.	Thin Strip Casting for Fe 6,5% Si.	People's Republic of China
Dr. Sigrid Jacobs	Arcelor Mittal global R&D	Electromagnetic materials suited for electrified transport	Belgium
Dr. Leonardo Franchini	Eurogroup	Effect of housing on iron loss of electric motor cores fastened with gluefastec <sup>®</sup> and conventional methods	Mexico
Dr. Erick Hilinsky	Tempel	Adhesive bonding of laminations.	U.S.A.
Dr. Gwynne Jhonston	Metals Technology Consulting	Electrical Steel market status and vision for the future	U.S.A.
Mr. Liu Xian Dong	BAOSTEEL Europe Technical Service Center	New developments of BAO STEEL in the field of Grain Oriented Electrical Steel	People's Republic of China
Dr. Lin Cheng	Shougang	Demand and New Development of High-grade NGO material of China	People's Republic of China

NAME	AFFILIATION	SUBJECT FOR LECTURE	STATE
Prof. Jürgen Schneider	University of Freiberg	Evolution of Microstructure and Texture for Electrical Steels - Non Grain Oriented vs. Grain Oriented ES	Germany
Dr. Stefano Fortunati	RINA-CSM		Italy
Dr. David Stickler	Big River Steel	HGO and NGO at Big River Steel	U.S.A.
Dr. Takashi Kataoka	Nippon Steel Corporation	Recent Development of Grain-Oriented Electrical Steel at Nippon Steel Corporation	Japan
Dr. Fiona Robinson	Cogent Power	Low thickness NGO FeSi Electrical Steel for high frequency automotive application	Wales - UK
Prof. Guo Yuan	Northeastern University	The development of strip casting electrical steel	People's Republic of China
Dr. G. Carlo Abruzzese	Spires RINA-CSM	Metallurgical Model of HTCA for GO Silicon Steel including prevision of Magnetic Properties (B800) and Secondary Grain Size (MOGOCA-EVO)	Italy
Prof. Fernando Landgraf	Universidade de São Paulo	A review of the concept and results of hysteresis loss subdivision into Low and High induction components	Brazil
Dr. Niklas Volbers	Vacuumschmelze	Soft magnetic materials for highest power densities and related part production technologies	Germany

## 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

Each presentation will be approximately of 25 minutes.

SPECIAL SESSION				
New Equipment Technology for High Grade Non-Oriented Electrical Steel				
PROCESS PHASE	NAME	AFFILIATION	SUBJECT FOR LECTURE	STATE
Casting&Hot Rolling	Dr. Christian Bilgen	DANIELI WEAN UNITED	QSP-DUE – Danieli's ultimate technology for non-oriented electrical steel production	Germany/ Italy
HRC Annealing&Pickling	Ing. Stefano Luperi	RINA-CSM	Innovative solutions for continuous HRC Annealing&Pickling treatment of high quality NGO ES grades	Italy
Cold Rolling	Ing. Konrad Krimpestaetter	PRIMETALS	Overview of cold rolling technologies for successful production of NGO thin-gauge electrical steels	Austria/ Japan
Final Continuous Annealing	Dr. Christian Wuppermann	TENOVA LOI THERMOPROCESS	Final Continuous Heat Treatment Lines for NGO Silicon Steel	Germany
Coating	Dr. Johan Schellemborg	REMBRANDTIN	Coating and Coating Equipment for high grade NGO Electrical Steels	Austria

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## MEDIA PARTNER

Webcom Communications Corporation	<a href="http://www.magneticmag.com">www.magneticmag.com</a>
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## PROCEEDINGS

The WMM'20 proceedings book including all the papers from invited speakers and posters will be printed in full color and distributed at the conference.

## VISA APPLICATION

All regularly registered conference attendees who need an invitation letter for the VISA application can send their request to the wmm20 secretary mail address: [wmm20@rina.org](mailto:wmm20@rina.org).

## 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](mailto:nhvillacarpegna@nh-hotels.com)**  
**<https://www.nh-hotels.com/hotel/nh-romavilla-carpegna>**

NH Roma Villa Carpegna is set in a quiet residential area, just a few kilometers away from the historical center and within easy reach of the Vatican City and St. Peter's square. The hotel offers an attractive alternative for your stay in Roma. Lying outside the bustling and chaotic center, it provides the perfect balance between city life and suburban tranquility.

During the warmer months guests can lie back and relax around the large swimming pool. Just a few minutes' drive away, the city's main metro line provides easy access to all major attractions and frequent buses will take you straight to the heart of the city. NH Roma Villa Carpegna has 201 comfortable rooms, all of which are decorated in classic style with wooden and red details. They all come equipped with TV, minibar and free Wi-Fi connection and offer views of the swimming pool or the garden. Every morning a healthy breakfast buffet is served to make you start your day in the right mood. The "Gelsomino" restaurant offer both regional and international dishes, prepared with the freshest ingredients by our experienced chef. If you prefer a quick snack, or just a glass of wine, our bar is the perfect choice.

After a long business meeting or a day sightseeing, guests can unwind and sunbathe by the peaceful outdoor swimming pool. If you're arriving by car, the hotel is provided with a private parking too. The hotel boasts its own congress center with 15 multi-purpose rooms, the biggest of which measures 370 square meters and can seat up to 350 people. Our attentive and supporting team can provide you with the required technologies: amplification system, flipchart, screen, overhead projector. The versatility of the spaces makes them suitable for any sort of planned event.

## WMM20 CONFERENCE AREA

WMM20 conference will have at its disposal a very large and well-connected area:

- LEONARDO PLENARY ROOM devoted to the conference sessions
- RAFFAELLO ROOM to host the Exhibitors
- Leonardo Foyer to host the POSTER sessions

## ACCOMMODATION AT HOTEL NH ROMA VILLA CARPEGNA 4\*

For the conference delegates an allotment of 100 rooms is available at the NH Roma Villa Carpegna conference site with the following SPECIAL RATES:

**Double Room Single Use Standard BB 129,00 EUR per room per night - IN 22/06/2020 OUT 25/06/2020 (3 nights)**  
**American Buffet Breakfast included**  
**Rome City Tax 6,00 EUR per person per day**

These rates are valid by booking through the dedicated BOOKING SERVICE of the conference only.

### Distance from the hotel

**ROMA Fiumicino Airport**  
27 km / 30 min

**ROMA Termini train station**  
6 km / 15 min

**Vatican City**  
2,7 km / 7 min

**City centre**  
6 km / 15 min

## SOCIAL EVENTS FOR ALL DELEGATES

### First Day

- Visit to RINA Labs and Pilot Plants of Castel Romano, Rome
- Welcome dinner in a nearby farmhouse with traditional regional country cooking. Friendliness and warmth, nature, comfort and well-being, all immersed in greenery just a few kilometers from Rome

### Second Day

- Guided Visit to Roman Sites: departure by private bus with English speaking local guide for a gorgeous panoramic visit of the most emblematic sights, monuments and streets of the Eternal City
- Conference dinner in one of the most prestigious and well-known Roman venues

## HOTELS NEAR THE CONFERENCE VENUE

### HOTELS 4 Stars

**Cardinal Hotel St Peter**  
(4 minutes drive, 5 minutes walking, 400 mt)  
Via Leone Dehon, 71 - Tel. 06 632252

**Hotel Occidental Aurelia**  
(7 minutes drive, 20 minutes walking, 1500 mt)  
Via di Torre Rossa, 80 - Tel. 06 6610551

### HOTELS 3 Stars

**Hotel Alessandrino**  
(7 minutes drive, 20 minutes walking, 1600 mt)  
Via Clemente Alessandrino, 9 - Tel. 06 39674144

**Hotel Gravina San Pietro**  
(7 minutes drive, 20 minutes walking, 1600 mt)  
Via della Cava Aurelia, 17 - Tel. 06 39674205

**Hotel Il Cantico**  
(7 minutes drive, 20 minutes walking, 1600 mt)  
Via del Cottolengo, 50 - Tel. 06 94362401

**Hotel San Pietro**  
(7 minutes drive, 20 minutes walking, 1600 mt)  
Via Cardinal Cassetta, 9 - 06 630876

### BED & BREAKFAST

- **Casa Piccole Ancelle di Cristo Re** (5 minutes drive, 15 minutes walking, 1100 mt)  
Via Aurelia, 325 - Tel. 06 39366242
- **Villa San Giovanni Casa per Ferie di Suore** (5 minutes drive, 15 minutes walking, 1200 mt)  
Via del Casale di S. Pio V, 1 - Tel. 06 6638977
- **Casa San Juan de Avila** (5 minutes drive, 15 minutes walking, 1300 mt)  
Via Torre Rossa, 2 - Tel 06 88801391

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## EXHIBITORS

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## MEDIA PARTNER

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