



TECHNISCHE UNIVERSITÄT
BERGAKADEMIE FREIBERG
The University of Resources, since 1768.



UK Magnetic Society

WMM'18

Dresden, Germany
June 12th to 14th, 2018

PROGRAM

8th
INTERNATIONAL
CONFERENCE ON
MAGNETISM AND
METALLURGY

Conference Program

Monday, June 11th, 2018

4.00 - 6.00 pm registration at art´otel

Tuesday, June 12th, 2018

8.00 - 8.30 am registration at art´otel

Morning Session – Chairman A. Moses

8.30 – 9.00 am

R. Kawalla, IMF, TU Bergakademie Freiberg, Germany

Research & Development of Non-Oriented Electrical Steel at the Institute of Metal Forming Freiberg – Technologies for Optimized Properties

9.00 – 9.15 am

M. Grismajer, SAENA GmbH, Dresden, Germany

Electromobility competence in the Free State of Saxony

9.15 – 9.30 am

A. Stöcker, IMF, TU Bergakademie Freiberg, Germany

Joint research project: Low-loss FeSi sheet for energy-efficient electrical drives

9.30 – 10.00 am

S. Lee, Posco, Korea

New products and technologies for Non-Oriented Electrical Steels at POSCO

10.00 – 10.30 am **Coffee Break**

Morning Session – Chairman A. Schoppa

10.30 – 11.00 am

N. Volbers, VAC, Germany

Soft Magnetic Crystalline NiFe and CoFe Alloys – Status and New Developments

11.00 – 11.30 am

M. Villani, Aquila University, Italy

High Performance Electrical Motors for Automotive Applications – Status and Future of Motors with Low Cost Permanent Magnets

11.30 – 12.00 am

S. Arai, Nippon Steel & Sumitomo Metal Corporation, Futtsu Japan

Recent Development of Grain-Oriented Electrical Steel for Low Noise Transformers

12.00 – 1.30 pm **Lunch**

Afternoon Session – Chairman G. Abbruzzese

1.30 – 2.00 pm

K. Krimpelstaetter, Primetal Austria

Solutions for Plant & Performance Improvement for Thin and Ultrathin High-Si Electrical Steel

2.00 – 2.15 pm

S. Melzer, Tata Steel, The Netherlands

In-Situ Real-Time Measurement of Primary Recrystallisation in Grain Oriented Electrical Steel Using High Temperature XRD

2.15 – 2.30 pm

E. Gallo, Nucor, U.S.

Recent Developments in the Production of High-Grade Semi-Processed Cold Rolled Motor Lamination Steels

2.30 – 3.00 pm

A. Dongyang, Shougang Group, China

Performance and Application Research of High-Strength Non-Oriented Silicon Steel for EV Produced by Shougang

3.00 – 3.30 pm

Coffee Break

3.00 – 4.00 pm

Poster Session

4.30 pm

Departure to Freiberg

Wednesday, June 13th, 2018

Morning Session – Chairman S. Paolinelli

8.00 – 8.30 am

G. Jian, Shougang Group, China

Tendencies of grain oriented electrical steels in China

8.30 – 9.00 am

E. Hilinski, Tempel Steel, US

Annealing of Fully-Processed and Thin Non-oriented Electrical Steels – Another Form of Semi-Processed?

9.00 – 9.30 am

A. Schoppa, PMG Füssen, Germany

Soft Magnetic Powder Materials – Status of Development and Applications

9.30 – 10.00 am

V. Franco, University of Sevilla, Spain

Soft magnetic nanocrystalline materials and their application: Status and further developments

10.00 – 10.30 am

Coffee Break

Morning Session – Chairman S. Sprague

10.30 – 11.00 am

K. Hameyer, RWTH Aachen University, Germany

High efficient electrical drive systems: Influence of power electronic on the magnetic circuit of electric motors

11.00 – 11.30 am

C. Brombacher, VAC Germany

Status and further developments of RE-magnets

11.30 – 11.45 am

L. Ferraris, Politecnico di Torino, Italy

NdFeB bonded magnets: Processes and applications

11.45 – 12.00 am

E. Theisen, Metglas Inc., U.S.

Development of new amorphous and nanocrystalline materials for use in energy-efficient devices

12.00 – 1.30 pm **Lunch**

Afternoon Session – Chairman M. Villani

1.30 – 2.00 pm

S. Sprague, ProtoLam, LLC, US

Recent Progress in Optimum Choice of Electrical Steels for Electrical Machines and Components

2.00 – 2.30 pm

A. Bertuzzi, L.A.E., Italy

State of the Art transformer Cores and Windings & Innovative solutions for distribution transformers

2.30 – 2.45 pm

P. Klimczyk, Dr. Brockhaus Messtechnik GmbH, Lüdenscheid, Germany

In-line system for continuous segment evaluation of electrical steel after laser treatment

2.45 – 3.00 pm

M. F. de Campos, Federal Fluminense University, Brazil

Measurements of residual stresses in FeSi steels and their effect on the hysteresis losses

3.00 – 3.30 pm **Coffee Break**

Afternoon Session – Chairman B. Linzer

3.30 – 4.00 pm

S. Martines, Tenova, Italy

Innovative Solutions for Continuous Annealing and Treatment Lines for the Production of Electrical Steels

4.00 – 4.30 pm

S. Xie, BAOSTEEL, China

Evolutionary Direction of Non-Oriented Silicon Steel Materials Technology

4.30 – 6.00 pm **Poster Session**

7.00 pm **Conference Dinner**

Thursday, June 14th, 2018

Morning Session – Chairman P. Anderson

8.00 – 8.30 am

X. Liu, BAOSTEEL Europe Technical Service Center

Present situation and future of silicon steel material for new energy automobile

8.30 – 9.00 am

S. Jacobs, ArcelorMittal Global R&D, Zwijnaarde, Belgium

The Impact of iCARE® Electrical Steels for Electrified Traction on Machine Performance

9.00 – 9.30 am

B. Linzer, Primetal, Austria

Status, achievements and outlooks of endless steel strip production with a focus on electrical steels

9.30 – 9.45 am

Y. He, CANMET, Canada

Evolution of Texture in Non-Oriented FeSi Steels

9.45 – 10.00 am

I. Petryshynets, Slovak Academy of Sciences, Kosice, Slovakia

The development of high-strength NO electro-technical steel with composite microstructure

10.00 – 10.30 am **Coffee Break**

Morning Session – Chairman E. Hilinski

10.30 – 10.45 am

S. Fortunati, CSM, Italy

Influence of Chemical Composition and Processing on the Grain Growth Kinetics of Electrical Steels

10.45 – 11.00 am

J. Schneider, IMF, TU Bergakademie Freiberg, Germany

Evolution of Texture at Final Annealing by Recrystallization and Grain Growth in Non-Oriented Ferritic FeSi

11.00 – 11.30 am

G. Abbruzzese, CSM, Italy

Metallurgical model of the high temperature coil annealing in GOES production

11.30 – 12.00 am

F. Landgraf, IPT, Brazil

Lower losses in electrical steels at kHz frequency by plastic deformation and recovery

12.00 – 1.30 pm **Lunch**

Afternoon Session – Chairman S. Fortunati

1.30 – 2.00 pm

A. Moses, Cardiff University, Wales

Quantification of additional losses in rotating machine cores

2.00 – 2.30 pm

A. Stadler, Hochschule Coburg, Germany

The Role of Soft Magnetic Materials for Improved Power Transmission in High Power Applications

2.30 – 3.00 pm

B. Bacroix, CNRS - National Center for Scientific Research, France

Stored Energy at Cold Deformation – Characterization and Prediction

3.00 – 3.15 pm

U. Prahl, IMF, TU Bergakademie Freiberg, Germany

Towards integrated material and process modelling and simulation of electrical FeSi steel sheet production

3.15 – 3.30 pm

P. Anderson and A. Schoppa

Resume of the poster session

Posters

Poster 1

D. S. C. Amorim, Aperam, Brazil

The effect of the Manganese content on the final texture and magnetic induction of the 2.0%Si Non- oriented silicon steel produced by Steckel finishing mill

Poster 2

G. Bavendiek, IEM, RWTH Aachen University, Germany

Magnetization models for hard magnetic material

Poster 3

E. Cardelli, University of Perugia, Italy

Energy Losses in Non-Oriented Silicon Steels for E-Mobility

Poster 4

E. Cardelli, University of Perugia, Italy

Non-Invasive Testing of Crystal Grain Orientation for Electrical Steels with Goss Texture

Poster 5

M. G. M. M. Cesar, MGRMELO, Brazil

Effect of p_{H_2O}/p_{H_2} ratio in the final annealing on secondary recrystallization and coating properties of 3% Si steel

Poster 6

G.-M. Chen, China Steel Corporation, Republic of China (Taiwan)

The effect of core material properties on torque and motor efficiency of drone/quadcopter

Poster 7

G.-M. Chen, China Steel Corporation, Republic of China (Taiwan)

The effect of the punching clearance and interlocking shape on the magnetic properties of electrical steels

- Poster 8 **H. Choi, POSTECH GIFT, Republic of Korea**
Effects of pre-deformation on edge cracks of non-oriented electrical steels during cold rolling
- Poster 9 **S. Cicalé, Rina Consulting, Italy**
Metallurgical Role of the Hot rolled strip annealing, in the framework of GO electrical steel production through nitriding
- Poster 10 **J. R. de Oliveira Júnior, Aperam, Brazil**
Development of high grades non-grain oriented silicon steel with improved mechanical properties for high frequency applications
- Poster 11 **A. Ducamp, Elkem ASA, Norway**
Innovative Si alloys for making of electrical steel
- Poster 12 **D. Goll, Aalen University, Germany**
Quantification of structural details of electrical steel and influence of annealing unit „Low-loss FeSi sheet for energy-efficient electrical drives”
- Poster 13 **M. Heller, IMM, RWTH Aachen University, Germany**
Coupled cold rolling and heat treatment simulations to predict the microstructure and texture evolution on non-oriented electrical steels

Part of research unit „Low-loss FeSi sheet for energy-efficient electrical drives”
- Poster 14 **R. Hiergeist, Magnet-Physik Dr. Steingroever GmbH, Germany**
A Comparison of Two Different Magnetic Loss Models for Soft Ferromagnetic Materials in AC Magnetic Fields
- Poster 15 **L. Jun, China Iron and Steel Research Institute Group, China**
Effect of reduction of cold-rolling on textures of primary recrystallization annealing of grain-oriented silicon steel without inhibitor
- Poster 16 **Y. Kanto, Nippon Steel & Sumitomo Metal Corporation, Japan**
Combined Experimental / Numerical Modelling of Dynamic Flux Distributions and Losses in a Transformer Core
- Poster 17 **R. Kessler, ABB, Switzerland**
Net-Shape Nd-Fe-B Permanent Magnets Produced by Spark Plasma Sintering – Opportunities & Challenges Compared to Traditionally Sintered Magnets
- Poster 18 **M. Kitzberger, Johannes Kepler University Linz, Austria**
Magnetic characterisation of non grain oriented silicon iron using a new 2D-magnetizer with digital feedback control
- Poster 19 **W. Lenarz, SGL Carbon GmbH, Germany**
New Graphite Material Sigratine® BDM Plus for sleeves in NGO furnaces
- Poster 20 **N. Leuning, IEM, RWTH Aachen University, Germany**
Most appropriate soft magnetic material choice considering structural material parameters for electrical machines

Part of research unit „Low-loss FeSi sheet for energy-efficient electrical drives”

- Poster 21 **B. Meary, Bekaert Solaronics, France**
Compact, efficient non-contact and cost effective drying solutions for the GONGO Electrical Steel production
- Poster 22 **V. Milyutin, Institute of Metal Physics, Russia**
Effect of high magnetic field on the primary recrystallization texture in soft magnetic alloys with different easy magnetization directions
- Poster 23 **J. Na, POSTECH GIFT, Republic of Korea**
Final thickness reduction, bulk contents of sulfur and aluminum, development of cube + Goss texture and magnetic properties in Fe-3.1wt.%Si-0.1wt.%Mn steels
- Poster 24 **D. Schuller, Aalen University, Germany**
Realization of novel soft magnetic structures and components by additive manufacturing
- Poster 25 **G. Shilyashki, EMCE, Vienna University of Technology, Austria**
Local Distribution of Strain in the Interior of a Multi-Package Transformer Core
- Poster 26 **A. Stöcker, IMF, TU Bergakademie Freiberg, Germany**
Hot strip annealing of ferritic Fe-2.4wt.% Si for improving magnetic properties
- Part of research unit „Low-loss FeSi sheet for energy-efficient electrical drives”
- Poster 27 **P.-L. Sun, National Sun Yat-sen University, Taiwan**
Investigation of the cold-rolled and annealed through-thickness textures and microstructures in a 1.24% Si electrical steel
- Poster 28 **N. Trnka, Chemnitz University of Technology, Germany**
Compensation of frequency-dependent errors in current measurements
- Poster 29 **L. Wang, Maanshan Iron & Steel Co., China**
Effect of Annealing Process on High Frequency Magnetic Properties and Texture of Non-oriented Electrical Steel Containing 3.1%Si
- Poster 30 **Y. Wang, Wuhan University of Science and Technology, China**
Effect of a Hot Band Annealing on the Evolution of Microstructure as well as Texture at Cold Rolling and Final Annealing of Ferritic FeSi
- Poster 31 **H. A. Weiss, Technical University of Munich, Germany**
Impact of rolling and annealing on blanking related residual stress in non-oriented electrical steels
- Part of research unit „Low-loss FeSi sheet for energy-efficient electrical drives”
- Poster 32 **D. Wöckinger, Johannes Kepler University Linz, Austria**
A novel modeling approach of the effective permeability for magnetic composites
- Poster 33 **P. Yang, University of Science and Technology Beijing, China**
Recent study on the control of microstructure and texture in low graded non-oriented electrical steels by phase transformation
- Poster 34 **Y. Zaizen, JFE Steel Corporation, Japan**
Evaluation of Stress Distribution Due to Shearing in Non-Oriented Electrical Steel by using Synchrotron Radiation

Exhibitors

Company

L.A.E. Lughese Attrezzature per l'Elettromeccanica Srl

Metglas, Inc

Dr. Brockhaus Messtechnik GmbH & Co. KG

MAGNET-PHYSIK Dr. Steingroever GmbH

SGL Carbon GmbH

RINA Consulting - CSM S.p.A.

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