

Coiltech 2011 Nord Alpe Adria – 28/29 September 2011

SESSION 2

The team approach among the different components of the electrical motors: integration and comakership in designing among the different players in the supply chain

McKINSEY

Dr. Gabriele Mozzi

Introduction to the experience of the lean factory.

The Venice model factory: an head unit of a compressor for household appliances

Abstract

Curricula

In arrivo

SKF

Mrs. Carole Girardin and Ing. Alberto Visconti

How to increase E-motor efficiency in electrical applications through SKF bearing and mechatronic solutions.

Abstract

Electric and hybrid vehicles are a growing alternative to standard ICE powered passenger cars. The need for efficient, compact and robust electric machines, such as traction motors or starter-generators is significantly increasing; development efforts are being made along the complete industry value chain to achieve these targets.

SKF has developed new solutions for the electric vehicle market that enable efficient drive and control of electric machines in an accurate and robust manner.

A new range of energy efficient ball bearings will be launched this year, providing robustness at high speed and high temperature. This new product includes SKF patented E2 polymer cage and the optimized E2 internal geometry, as well as a specific long grease life. A newly developed low friction contacting seal can also be proposed when required.

The main benefits are low friction, leading to higher electric machine efficiency, lower heat dissipation, leading to higher robustness at high speed and high temperature, and optimized vibration level.

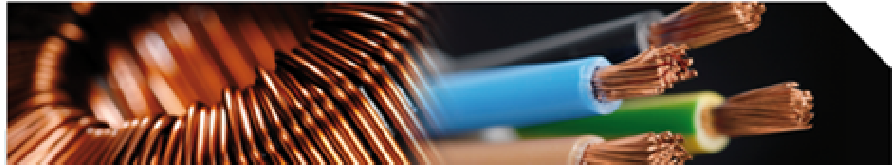
SKF also offers a full range of Mechatronic solutions.

The SKF Rotor Positioning Sensor-Bearing Unit provides two sine wave signals, enabling absolute position sensing to drive and control synchronous electric machines.

The SKF Motor Encoder Unit provides two accurate incremental squared signal, enabling direction of rotation and speed sensing, to drive and control asynchronous motors.

The main benefits are compactness, ease of assembly, as well as mechanical and electronic robustness over the entire application working conditions.

With these products, SKF helps electric machine developers and manufacturers to reach their efficiency, robustness, and cost targets. These new solutions, already validated by the market, are available for series production.



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Curricula Ing. Carole Girardin

- Ing. Carole Girardin has started her carrier 16 years ago in the SKF Engineering Research Center, in the Netherlands.
- She moved back 2 years later in France as development engineer for electrical applications.
- She worked during 6 years as application & project engineer in the field of automotive steering systems
- She was then appointed New Market Offers manager, for Automotive Powertrain and Steering applications
- She is now E-Powertrain Segment Manager, with the responsibility to offer new innovative products to the growing electric and hybrid vehicle market

Magnetic Tone Rings

Tone Rings have, as main task, the function of transmitting a magnetic signal to a sensor. For this reason they became a standard components for mechatronic applications.

These products can be used, according to the application needs, in stand alone execution or integrated into bearings, adding to the traditional bearing function (support a rotating shaft) info transmission (e.g. shaft speed, sense of rotation , angular position, shaft acceleration).

Moreover, issuing a magnetic signal, the tone rings fulfill design suitable for the application having better compactness, less design constraints, weight and cost reduction.

The principal tone ring application fields are breaking systems (ABS), engine control, or where the shaft rotation parameters are needed.

Curriculum Vitae Ing. Alberto Visconti

Dr. Ing. Alberto Visconti joined SKF in 1994 after other working experiences in PHILIPS (Major Domestic Appliances Division) and PPG (Plant Engineering).

His experience is based on Product Dev., Industrialisation and Application Engineering.

Presently he's responsible, within the SKF Sealing Solution, of the Bearing Seal & Tone Ring Design dpt.

CIBAS

Dr. Alessandro Chiappa

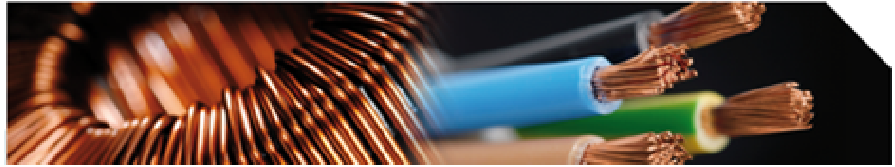
Rare Earths 2011 - Threats or Opportunities ?

Abstract

The Rare Earths Element, homogeneously distributed on the Earth are now-days extracted and purified mainly in China, where the monopole situation has generated a decreasing of the offer with incredible increases of prices.

The Rare Earth Permanent Magnets can become the new frontier for some electromechanical applications: from the Electrical Motors to the Generators to the position and electrical sensors, down to many industrial applications.

In the actual Raw Materials Market situation we observe the trend of the Rare Earth used to manufacture the NdFeB magnets.



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Potential and development of alternate magnetic materials to the NdFeB magnets
Cost analysis of different permanent magnets, from the Purified Raw Materials to the Powder preparation, to the finished products ready to use.

Curricula

In arrivo

M-PULSE

Massimo Furlan, Sebastian Wältring,

“Magnetizing multipole rotors with different reduction methods for cogging torque“

Abstract

Reduction of noise due to cogging torque drives the development of new motors in many applications.

The rotor magnetic design is one of the major aspects for the cogging torque.

Magnetization quality has to be considered.

The presentation shall provide some information about possibilities and constraints of the magnetization of rotors featured with cogging torque reduction.

Curricula

WEVO-CHEMIE

Dr. Speil

Innovative potting of electric motor stators.

Abstract

The casting of stators and generators is often recommended to improve the electrical insulation and heat dissipation or to protect against liquids and ignitable gas mixtures. Good flowability is an important property for the excellent impregnation of coils. The most common resins are based on polyurethane and epoxy. Various resins can fulfill the requirements up to class F and are UL listed. Polyurethane resins can be easily accelerated for faster curing and are available in a wide range of hardnesses. Newly developed resins can be combined with different economically priced mineral filler for high thermal conductivity up to 1,6 W/mK. Future generation of polyurethane resins with a high glass transition temperature will be applicable up to class H.

Curricula

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