Magnetec

Efficiency is our passion

PROFESSIONAL PROFILE

-Managing Director Magnetec Group since 2018

-Many years of experience in multinational companies

-Commercially and strategically astute business leader

-Internationally experienced at transforming and develop business

-instinctive eye for new applications and products, combined with an understanding for the markets and clients need with an in-depth knowledge of how to develop the product, process and service offering

-experienced in market initiatives to increase market share and build brand awareness and positively impact the top/bottom line

-Degree as Dipl.-Wirt-Ingenieur at University of Applied Sciences in Business Administration & Technical Engineering

- Degree as Electrician at Höhere Fachschule für Elektrotechnik

Thanks a lot!

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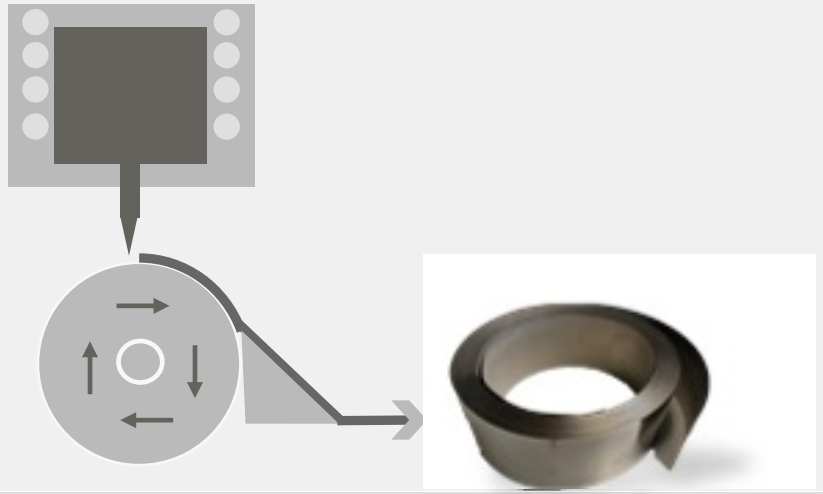
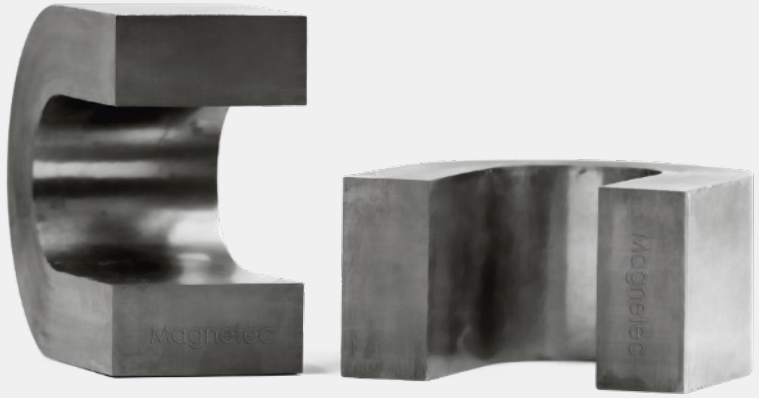
Nanoperm®

Our foundation for cores and chokes

- Nanocrystalline structure
- Iron alloy
- Soft magnetic properties
- Realization of different shaped hysteresis loops (F-, R- and Z-shape) possible

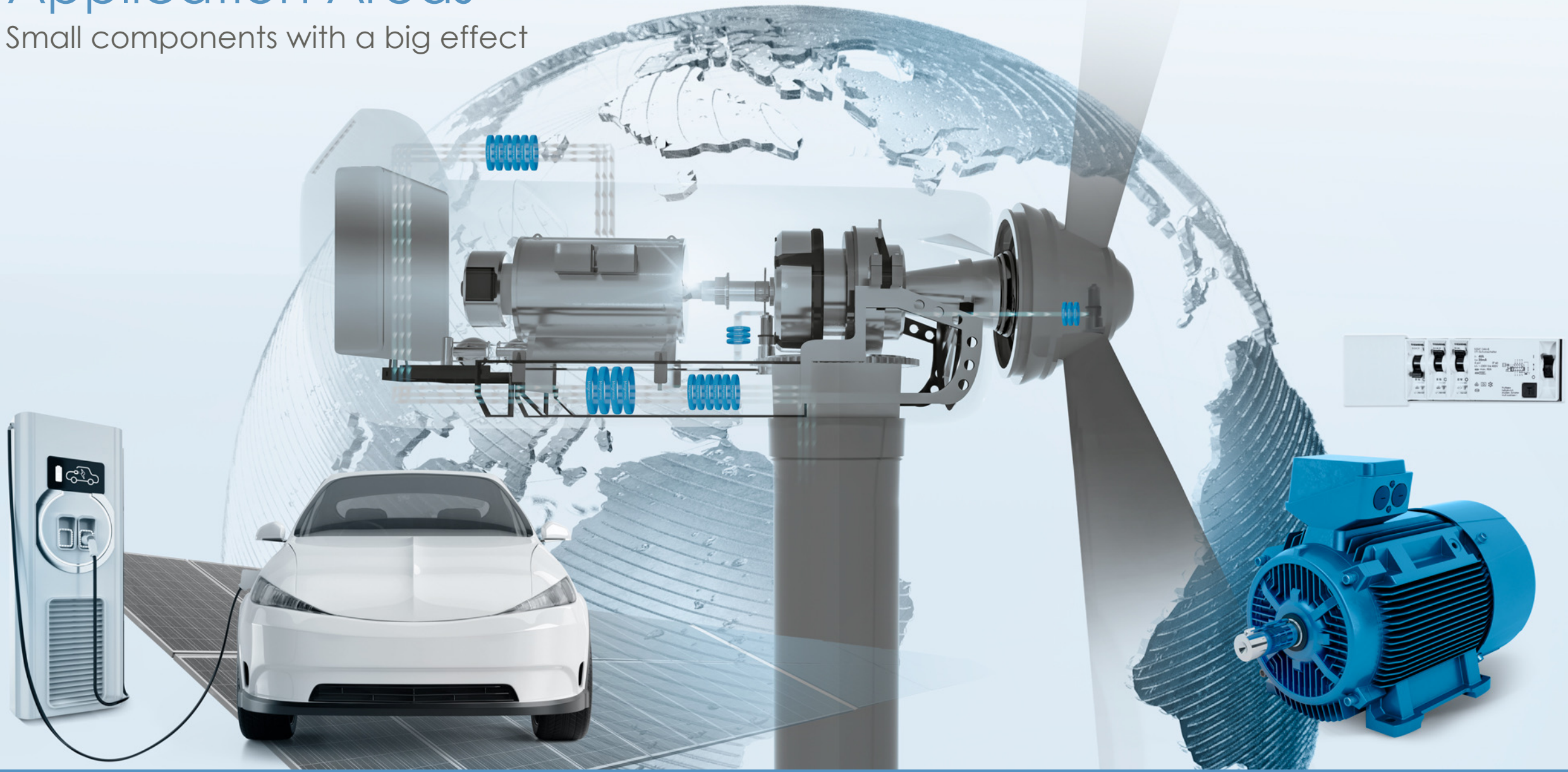




- Various permeability values & dimensions
- High saturation magnetization level
- Low power loss
- Low temperature dependency

Application Areas

Small components with a big effect



Business units

Automotive

- EMC reduction in electric vehicles
- Fault current detection in the charging infrastructure of electric vehicles

Energy

EMC reduction in:

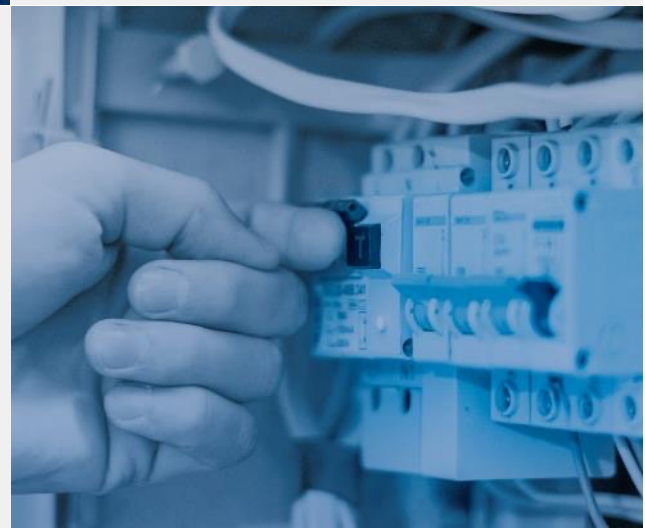
- Generators
- Inverters
- Transformers
- Smart meter
- HVAC systems

Industry

- EMC reduction in frequency inverter
- Motor bearing protection

Safety

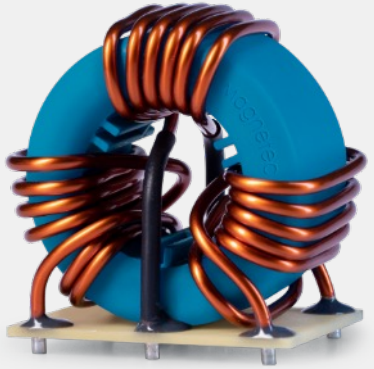
- Current transformers and sensor elements in electrical installations



Product portfolio

EMC cores

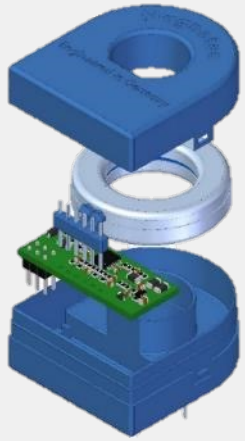
CoolBlue®
CoolTube®
NaLA®



Inductive components

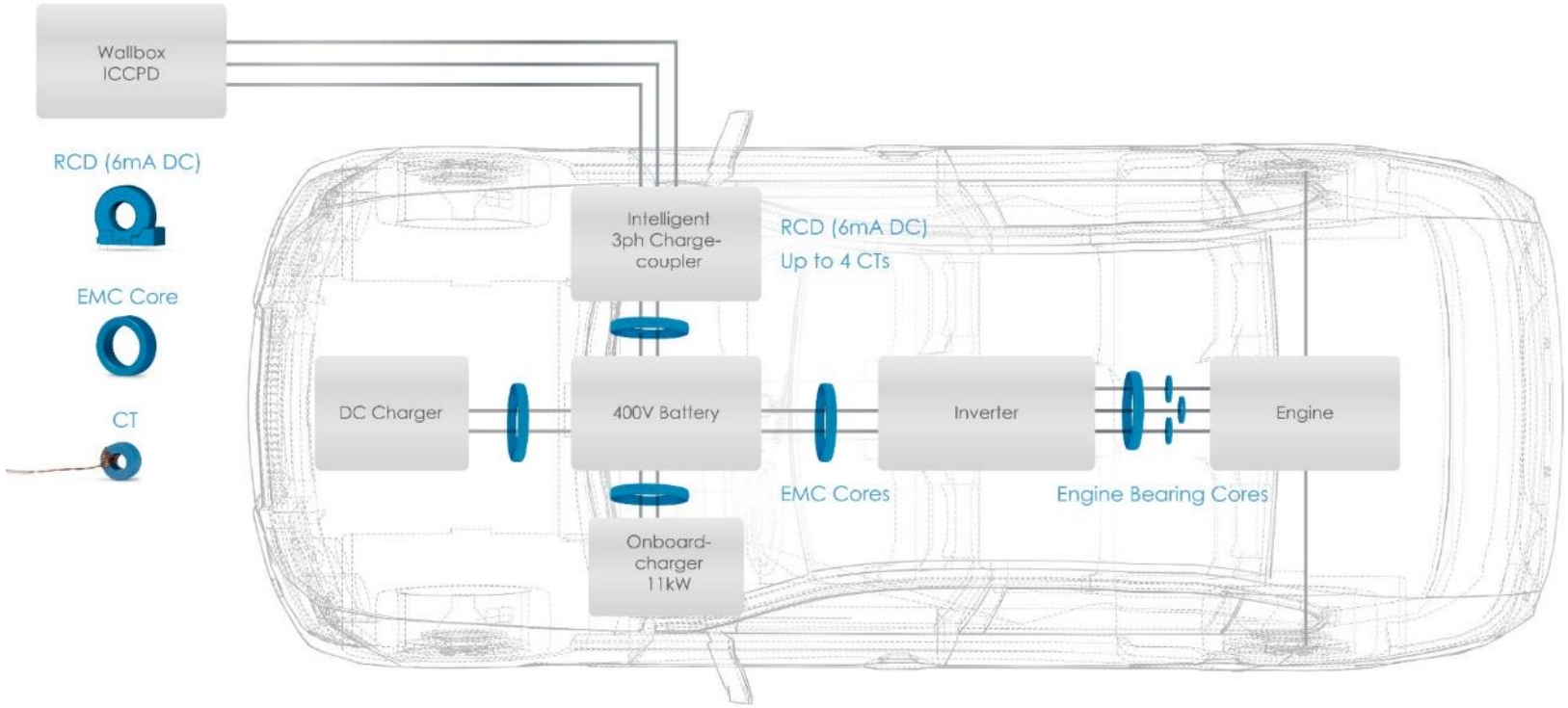
Residual current sensors

MAGBlue &
SafeBlue®



Current transformers

Business unit Automotive



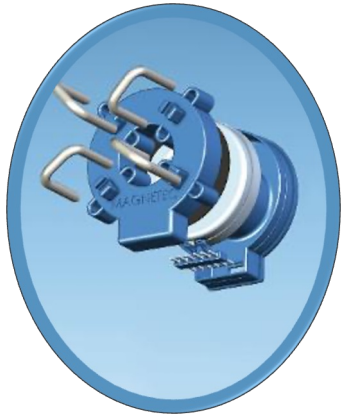
EMC in vehicle electrical system and powertrain

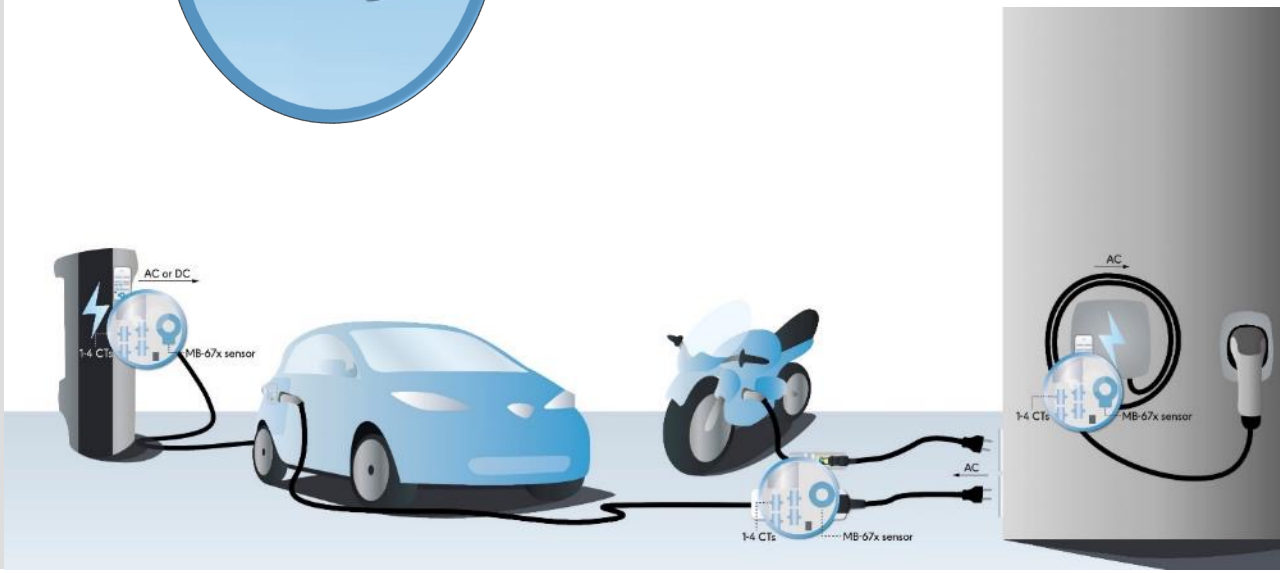
- Reduction of the motor bearing currents in the drive unit of the electric vehicles
- Increase in operational reliability and service life
- Reduction of electromagnetic interference signals

Business unit Automotive

MAGBlue Sensor for fault current detection

- Precise fault current detection
  - 6mA DC/direct currents
  - 30mA AC/alternating currents
- Reliable interruption of the circuit
  - Protection for the user
  - Protection of the type A circuit breaker of the home electronics
  - Integrated self-monitoring and test functions



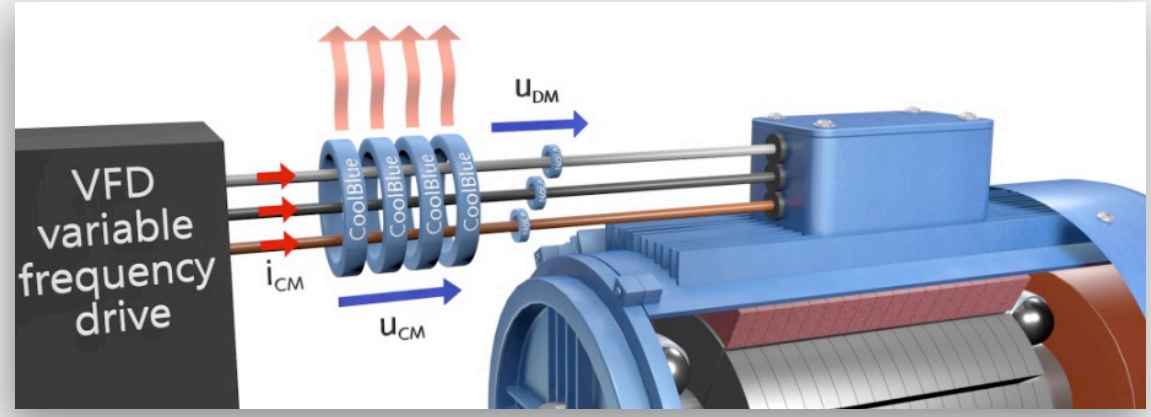


Business unit Industry

Motor bearing protection

- Reduction of conducted emissions
- Frequency range from 150kHz to 30 MHz
- Reduction of interference due to high load on the lines

Link product video



M | CoolBlue®

M | NaLA®

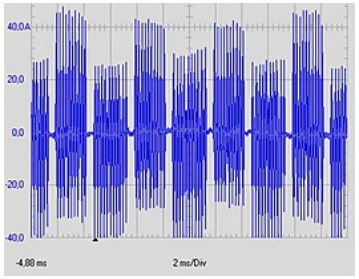
M | CoolTube®

- Good absorption, high saturation flux density
- Easy installation
- Effective, cost-efficient & maintenance-free
- Standard EMC cores from 16 mm to 300 mm outer diameter
- Permeability range: 500 to 90,000

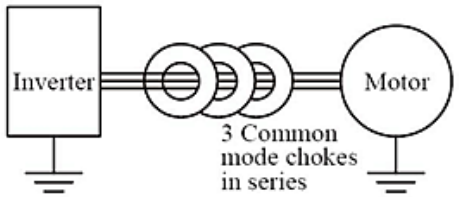
Business unit Energy

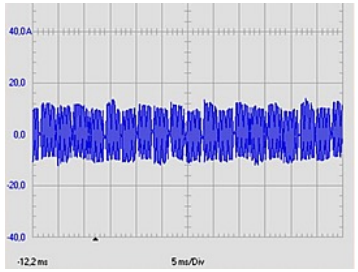
Motor bearing protection for wind turbines

- On frequency converter controlled electric motors
- Reduction of interference from radiated emissions



without filter core





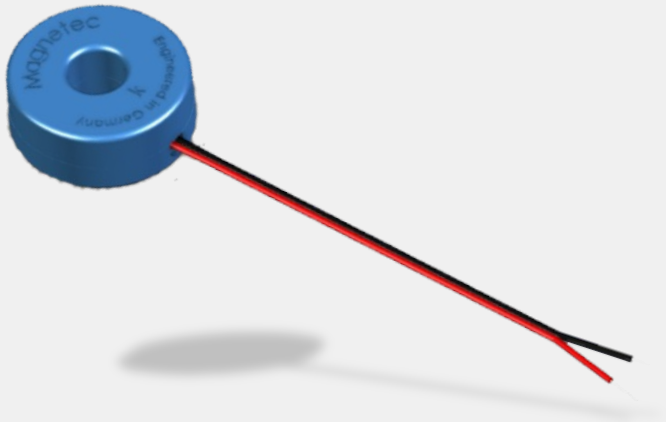
with Nanoperm® filter core

- Cost reduction by saving expensive and high-maintenance components such as insulated bearings and grounding rings
- Easy installation and retrofitting of existing systems

Business unit Safety

Current transformer, e.g. in the RCD

- Use of residual current transformers with nanocrystalline toroidal cores for the detection of fault currents



- Flexible core dimensions
- Very wide permeability range, adapted to the required sensitivity
- Defined stable temperature dependence in the range -25 ... + 100°C

Future Trends for Nanocrystalline Applications / Products

The market is in a constant development. The main challenges we see currently in the following areas:

- Weight & Space!!!
- Higher Frequency (100kHz)
- Heat absorption
- Shielding
- Different shapes, e.g. oval, retancular….

This requires further research and development activities on materials and processes to develop new materials with different characteristics.

Establishing of new Nano-Products / new applications

- Customers do not want to have simple products/components anymore
- EMC / Application environment is too complex and knowledge and resources are limited
- More „complex“ applications are needed to be successful
- Many times a ready to use product (e.g. nano plus electronics) is required
- Huge potentials are visible in the area of sensors and (active) Filters

Future Challenges Development

- Knowledge Gap in the market / at customers
- Developers do not know enough about Nanocrystalline materials/products
- Too less information and tools for testing & simulation available
- Early start of development with end customers needed
- Too many wrong promises from “experts” which cannot be achieved

Simulation Tool

https://simtool.magnetec.de

Default Comparator

PDF Export | Spice Export | Find Similar Products

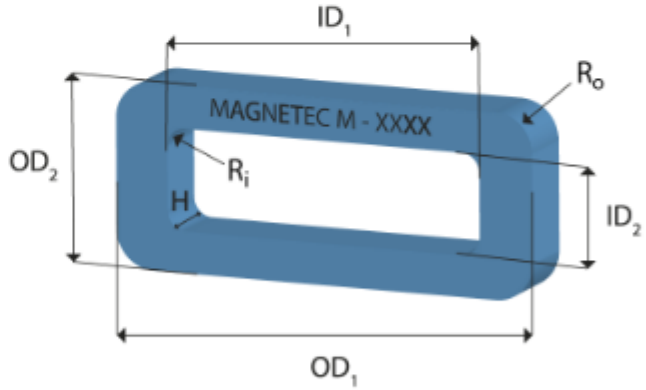
Design 1 +

Simulate All

Dimensions and Case Material of finished Products

Shape	Rectangular
Housing Material	Plastic Case
OD1 max [mm]	74
ID1 min [mm]	46
OD2 max [mm]	44,0
ID2 min [mm]	16,0
Inner Radius R_i [mm]	8,0

Illustration

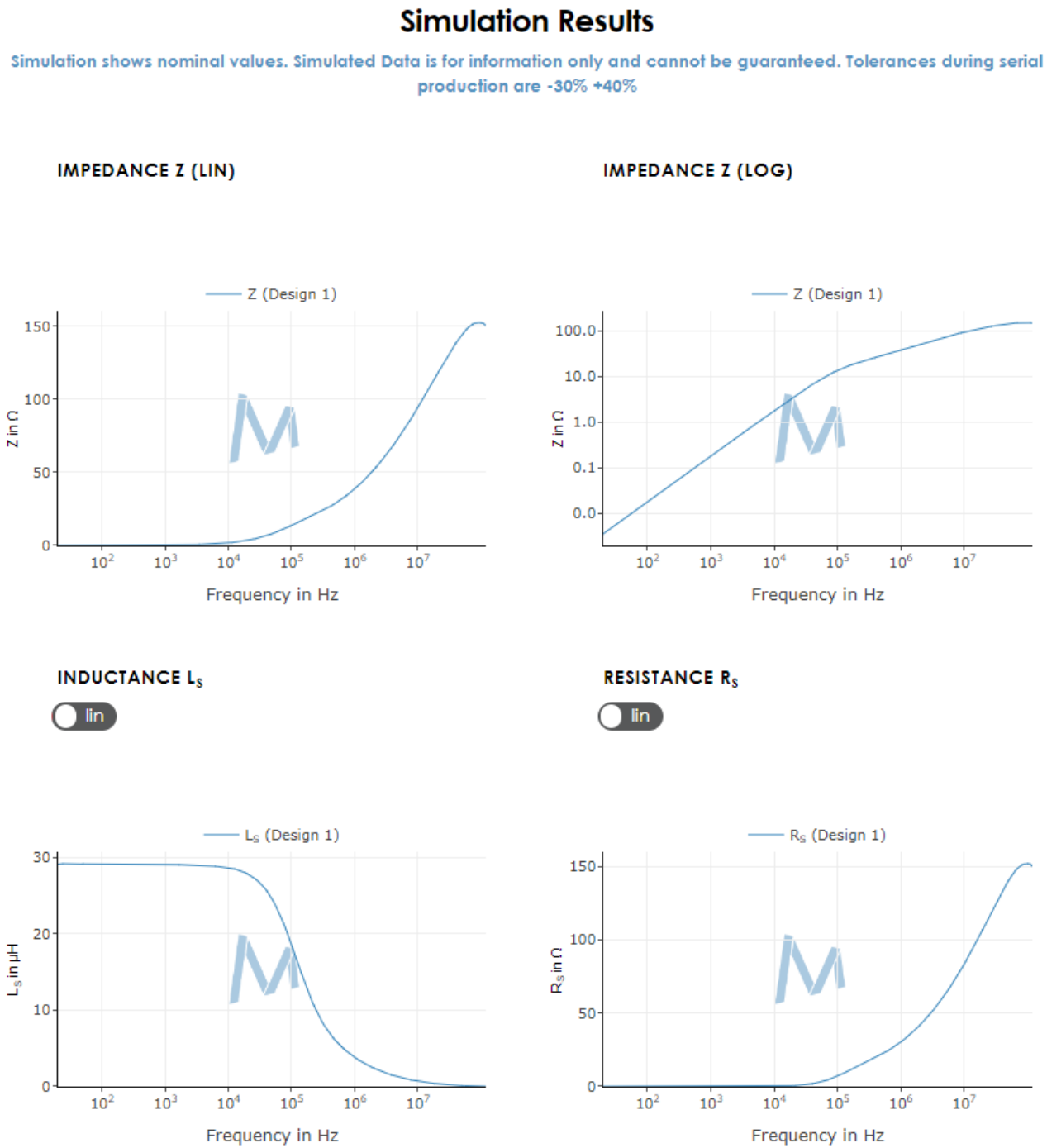


Electric and Magnetic Values

A_{Fe} [cm²]	1,46

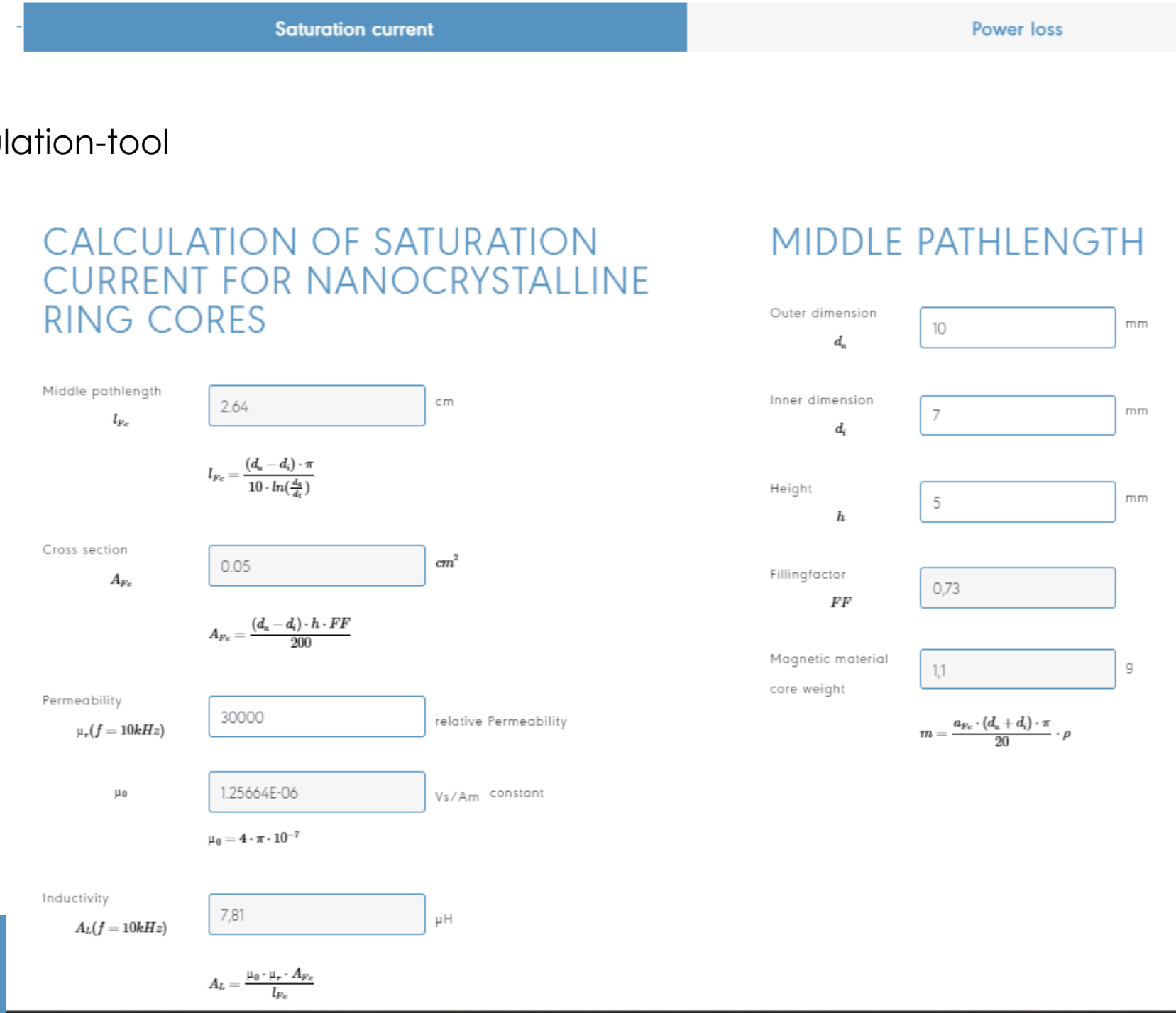
Simulation Tool

https://simtool.magnetec.de



Calculation Tool

https://www.magnetec.de/calculation-tool



Calculation Tool

CALCULATION OF POWER LOSS FOR NANOCRYSTALLINE RING CORES

Coreweight	114	g
Induction	0,9	T
Frequency	20	kHz
Formfactor	1,11	sin

Results

Power loss *	39,7	W/kg

$$P_{Fe}(m) = P0 \cdot (\frac{F}{F0})^x \cdot (\frac{f}{f0})^y \cdot (\frac{B}{B0})^z$$

Power loss *	4,5	W

$$P_{Fe} = \frac{P_{Fe(m)} \cdot Coreweight}{1000}$$

CONSTANT VALUES

F_0	1,11	sin
f_0	100	kHz
B_0	0,3	T
x	1,6	
y	1,8	
z	2	
P_0	80	W/kg

https://www.magnetec.de/calculation-tool

Future Challenges External

- Strong dependency on China
- More and more restrictions effecting Customers, Taxes, Costs and SC -> Step out of China is a requirement
- Limited competition due to political interventions (regulations, taxes)
- Constant SC-issues as a result effecting costs and deliveries

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