

# maglab Company Presentation

“**maglab** – your partner for magnetic system design and current measurement solutions”

Aug/2019  
P. Krummenacher

# Key Technologies for a Bright Future

- Our knowledge and products are used in
  - + E-mobility, HEV and EV
  - + Robotics and automation
  - + Renewable energies and energy efficiency
  - + Smart and fail-safe systems



# maglab AG Profile

- Strong expertise in magnetic system design and current sensing applications based on Hall and shunt
- Engineering service for magnetic shields, cores, and current sensor modules
- Strong partnerships
  - + Exclusive sales representative of PML India
  - + Preferred shield and core supplier of Melexis
- Large network of automotive and industrial customers



# PML-maglab-Partnership

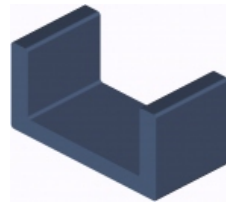
- maglab is PML design partner and exclusive representative
- One of the top 5 supplier in the automotive market for cores, shields, and shunts
- Collaborations with Valeo-Siemens, Delphi, Panasonic, Xiamen, Delta, Vertiv, Sekorm, Bosch, Tesla, Preh, Lear, and many more
- Design and manufacturing service for
  - + Magnetic components and systems,
  - + Shunt resistors and busbar assemblies, current sensor modules

# PML India Profile

- High volume, low cost manufacturing capability
- Qualified for industrial and automotive applications
  - + Shunt resistors and shunt current sensor modules
  - + Ferromagnetic cores, shields, and Hall-based current sensors
  - + Molded Packaging and module manufacturing
  - + Nano-crystalline and amorphous CTs, AlNiCo permanent magnets
  - + Sub-assemblies: Energy meters, gas meters, Hall current sensors
- Engineering team maglab AG, Switzerland and PML India

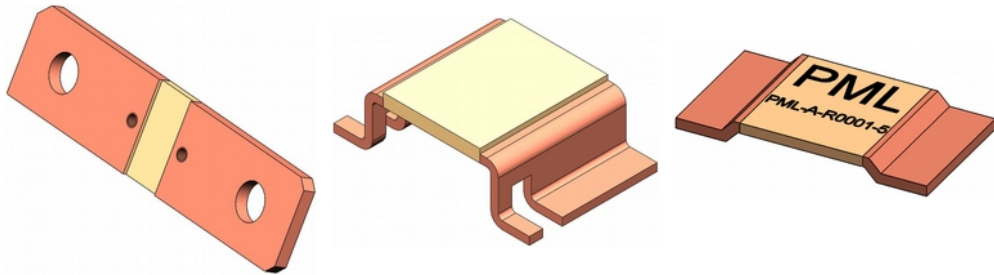
# Shields and Cores

- Standard products and customer-specific designs
  - + Shields: U-shields, laminated U-shields
  - + Cores: Laminated cores, amorphous cores
  - + Nickel-iron alloys (Ni-Fe) and silicon steel (Si-Fe)



# Shunt Resistors

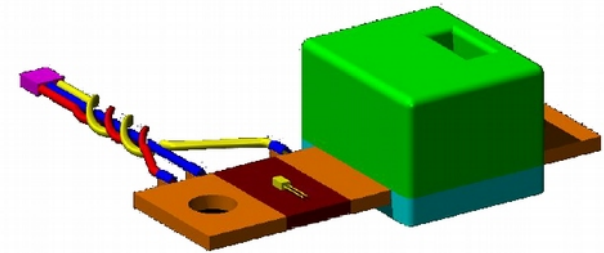
## Standard Automotive Cu-Mn Shunt Resistors



### Applications

- Current measurement
- Power inverters and IGBT modules
- Battery Management Systems (BMS)
- High power, high current
- Direct bonded copper and PCB assembly

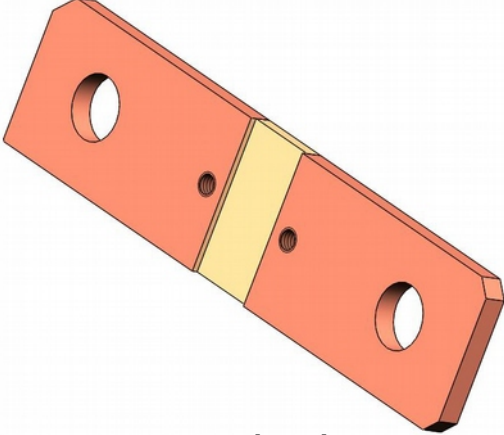
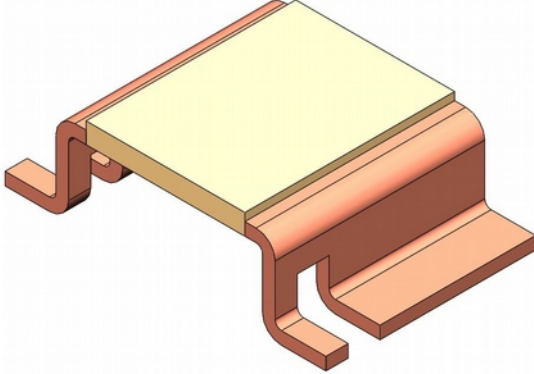
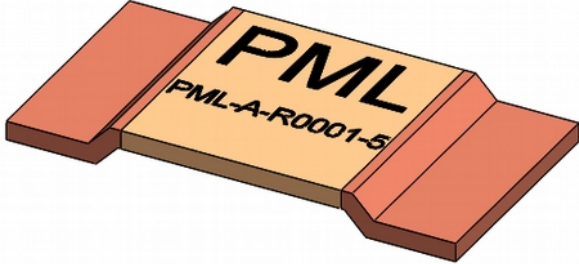
## Redundant Dual Current Sensor Modules



### Applications

- Functional Safety
- Battery Management Systems (BMS)
- Junction Box
- High power, high current

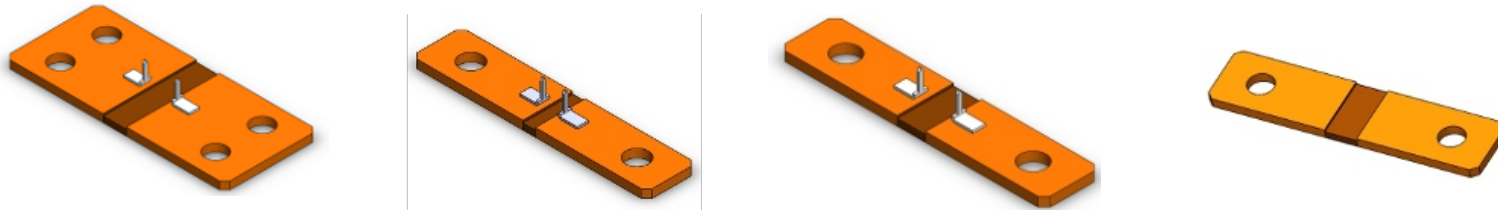
# Shunt Resistors

R100-BAR-03	R500-BRI-04	R1000-SMD-05
$\pm 600\text{A}$   36W	$\pm 150\text{A}$   12W	$\pm 70\text{A}$   5W
		
<ul style="list-style-type: none"><li>• Battery monitoring</li><li>• Battery mgmt systems</li><li>• eMobility, HEV, EV</li></ul>	<ul style="list-style-type: none"><li>• Power inverters</li><li>• IGBT modules</li><li>• Direct bonded copper</li></ul>	<ul style="list-style-type: none"><li>• Current sensing</li><li>• e-motorbike</li><li>• PCB assembly</li></ul>



# High-Power Shunt Resistors

- Applications include e-mobility, battery management systems (BMS), electric drive train
- Resistance values starting from 25  $\mu\Omega$
- Available as bare standard shunt elements or customer-specific busbar assembly, e.g., with battery clamp
- Contact pin options for pressfit, soldering




# Manufacturing

- PML India: [www.pmlindia.com](http://www.pmlindia.com)
  - + Shields and Cores: High Perm Unit
  - + Shunt resistors: Shunt Unit
  - + Proven track record: automotive, energy meters
  - + Certified company: ISO 9001:2015, ISO 14001:2015  
TS16949:2016



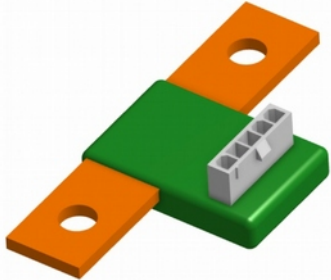
# Module Engineering: Feasibility, Demonstrator

- Intelligent battery sensors, battery management systems
- Prototyping and feasibility studies

**magLab** [www.maglab.ch](http://www.maglab.ch) | [www.pmlindia.com](http://www.pmlindia.com) 

Product Flyer

## Battery Sensing and Monitoring System 2.0 with 4kV Insulation and CAN Interface

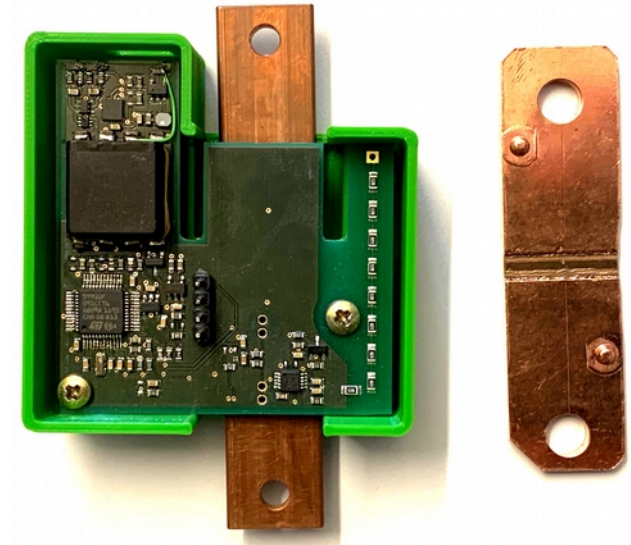


**Features**

- + Multisensor system: Current (Hall and shunt), voltage, temperature
- + Galvanically insulated design
- + High-side and low-side of HV battery
- + Contactless Melexis 91208 Hall sensor

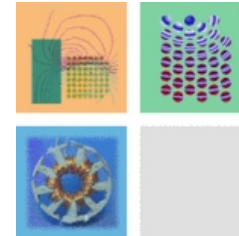
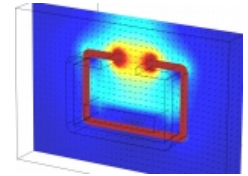
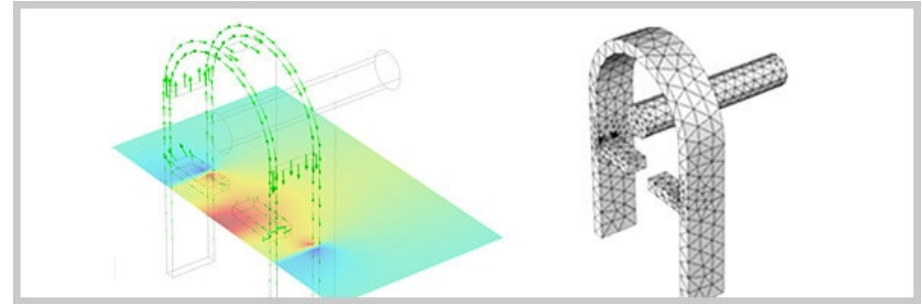
**Applications**

- + Battery monitoring, e-mobility
- + State-of-charge, state-of-health
- + Prototyping, development, test platform
- + Functional safety



# Systems Engineering, Simulation, and Modelling

- Magnetic systems engineering
  - + Performance – cost optimization
- Modelling partner
  - + Numerical Modelling GmbH  
[www.nmtec.ch](http://www.nmtec.ch)
  - + Magnetic, dynamic systems
  - + Thermal modelling
  - + Multiphysics, self-heating



# Customers



Thank you for choosing  
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