

- 电流传感器
- 角度传感器
- 位移传感器
- 齿轮传感器
- 磁场传感器

希磁科技 Sinomags —
磁 性 传 感 器 Magnetic Sensors

Industry
工业类



New Energy
新能源



Medical
医疗



Robotics
机器人



Automotive
汽车



Space
航空航天



希磁科技 & 磁性传感器

希磁科技公司简介

- ▣ 公司架构
- ▣ 希磁历程
- ▣ 体系 & 认证
- ▣ 知识产权
- ▣ 晶圆工厂

电流传感器

- ▣ 车载应用类电流传感器
- ▣ 车载单芯片电流检测方案
- ▣ 电流传感器的高频化
- ▣ 工业应用类电流传感器

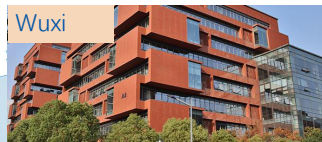
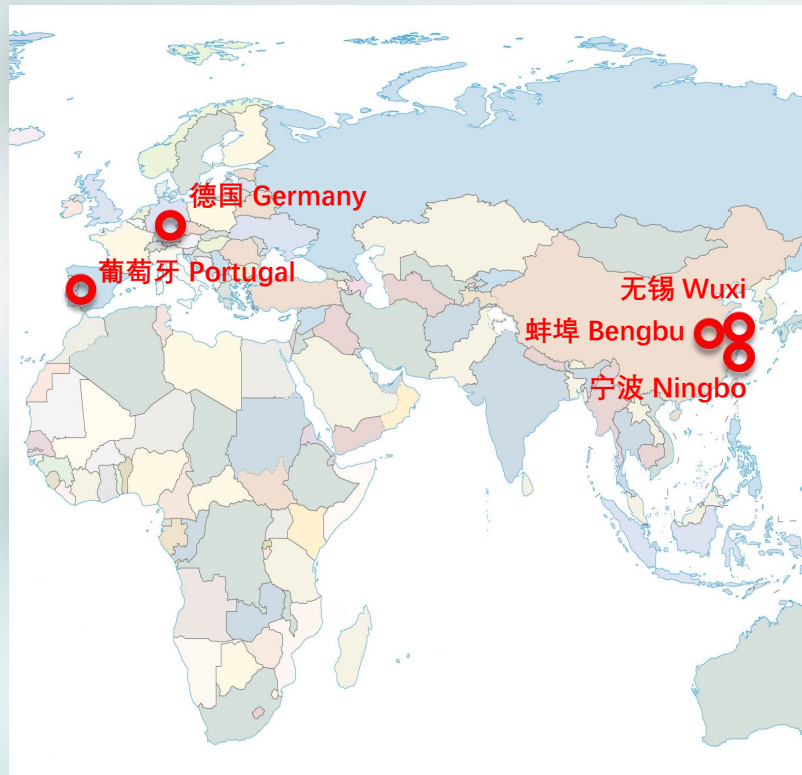
角度 & 位移 & 弱磁传感器

- ▣ 车载应用
- ▣ 工业 & 其他应用

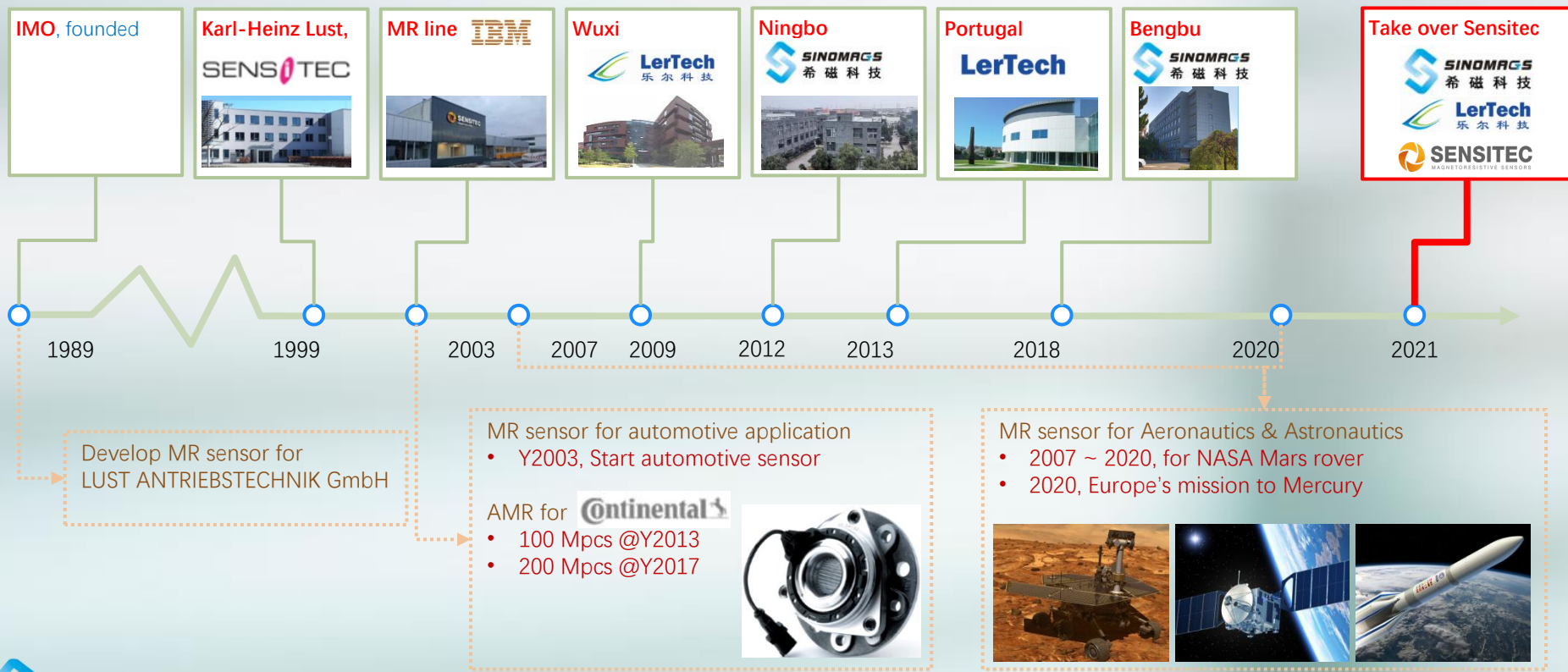
希磁科技概况 Sinomags Technology



Wafer → Chip → Module → System



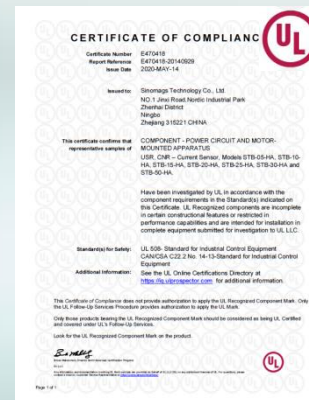
希磁科技历程 Company Milestone



体系 & 产品认证 Quality system & Product verification



2023Q2



ASIL
Automotive
Safety
Integrity
Level

知识产权 Patent Protection

MAGNETISM

- AMR ,GMR and TMR
- International Cooperation

WAFER

- Magnetic films & processing
- Designs for different applications

CHIP

- xMR+ASIC, high frequency & accuracy
- Packages for different applications

SENSOR

- Experience on system application
- Experience on sensor design

MODULE/SYSTEM

- Understanding on customers' requirements
- Understanding on standard of qualification/request
- 100% tested products
- Reliability test for developed products

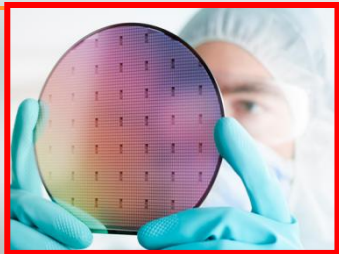
Patents for all products;

- Published ~ 210, Authorized ~ 130

1. xMR design
2. xMR chips
3. xMR module
4. magnetic sensing system



希磁科技晶圆工厂 Sinomags wafer fabrication line



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电流传感器

1. 车载应用类电流传感器
2. 车载单芯片电流检测方案
3. 电流传感器的高频化
4. 工业应用类电流传感器



新能源车用电流传感器 Current detection for EV

OBC, DC/DC



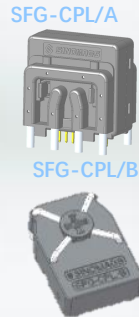
MCU-DC



MCU - AC/BOOST



AC-Charger



BMS



PORSCHE



Mercedes-Benz



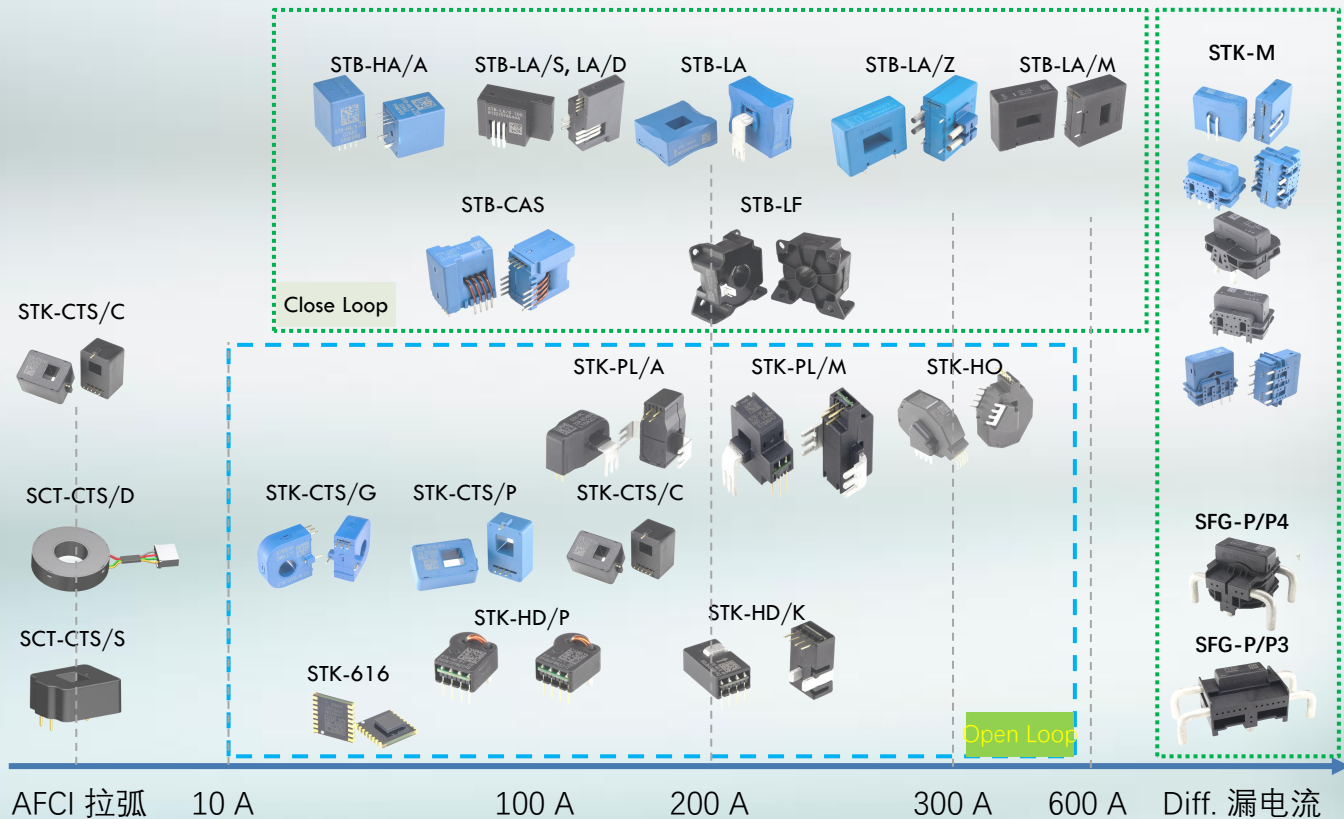
Volkswagen



Audi



光伏/储能用电流传感器 Current sensors for PV & energy storage



ups/变频/伺服/风能 Current sensors for driver/wind/ups



阳光电源
SUNGROW

GREE

EATON
Powering Business Worldwide

禾望电气
Hopewind

HITACHI
Inspire the Next

VERTIV
维谛技术

远景
零碳技术伙伴

Haier

Volttronic Power
AECO Power

日风电气
HRV ELECTRIC

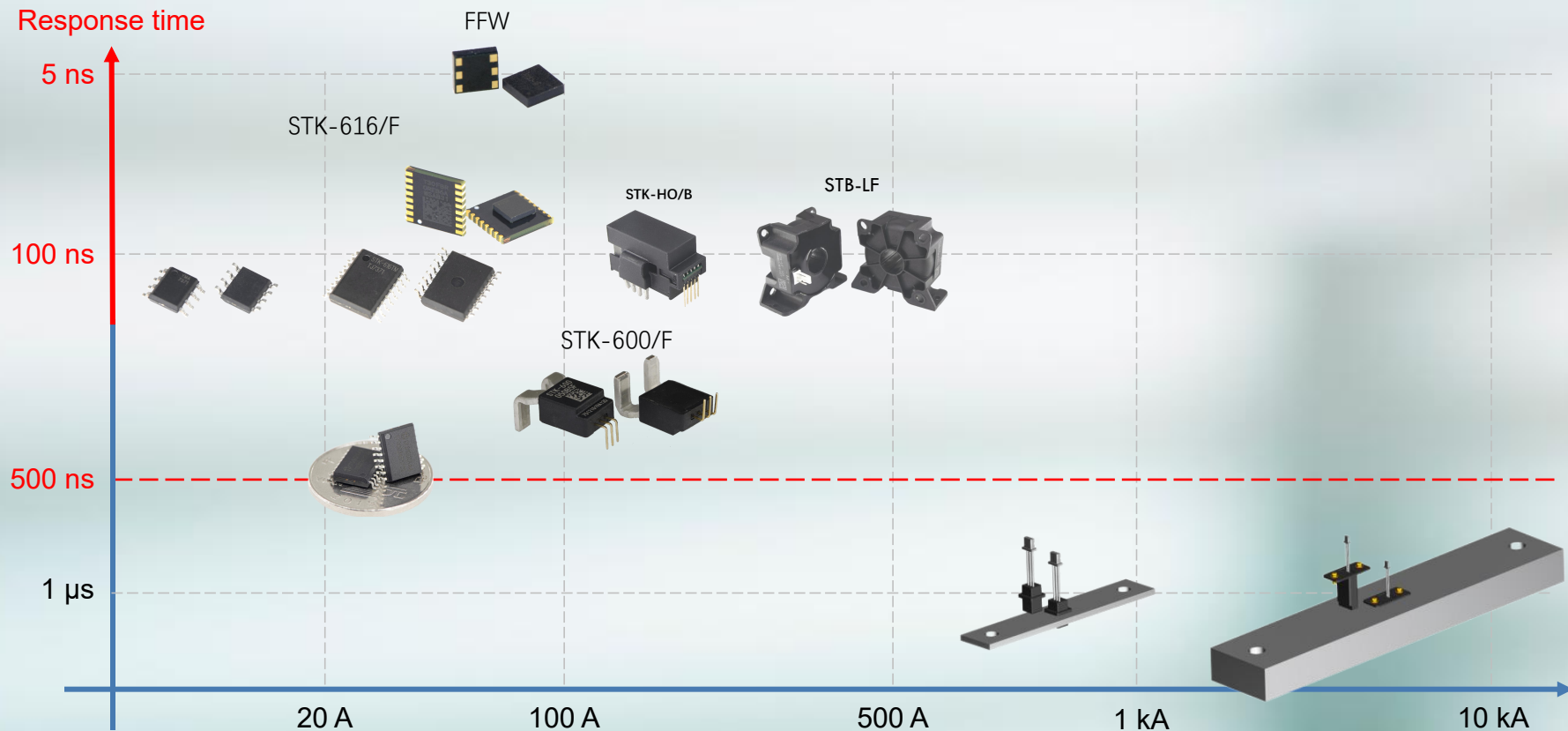
ABB

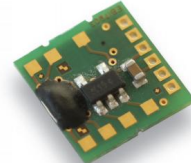
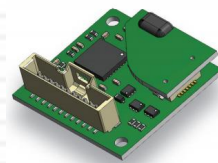
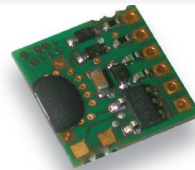
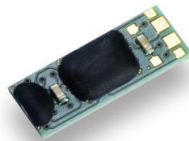
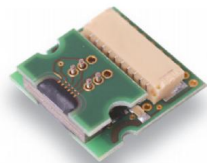
Schneider Electric
施耐德电气

LS 电气

希望森兰

电流传感器的高频化 Frequency vs Current Range





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角度 & 位移 & 弱磁检测传感器

火星探测器上的磁性传感器

磁性传感器的车载应用

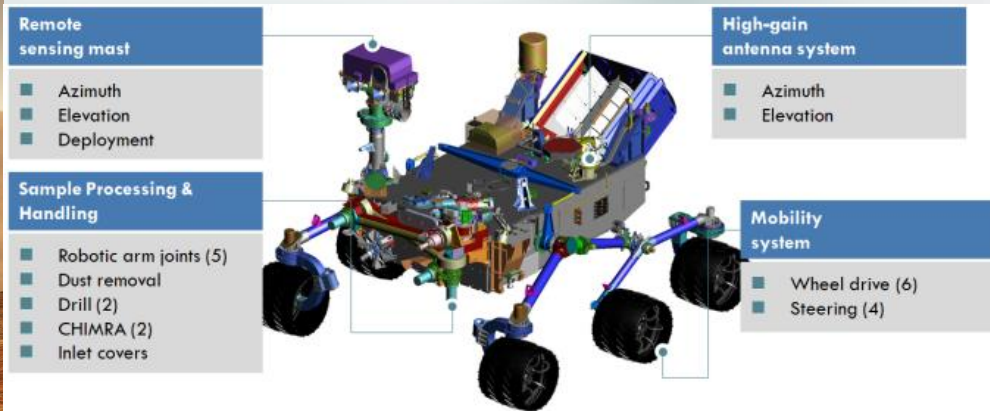
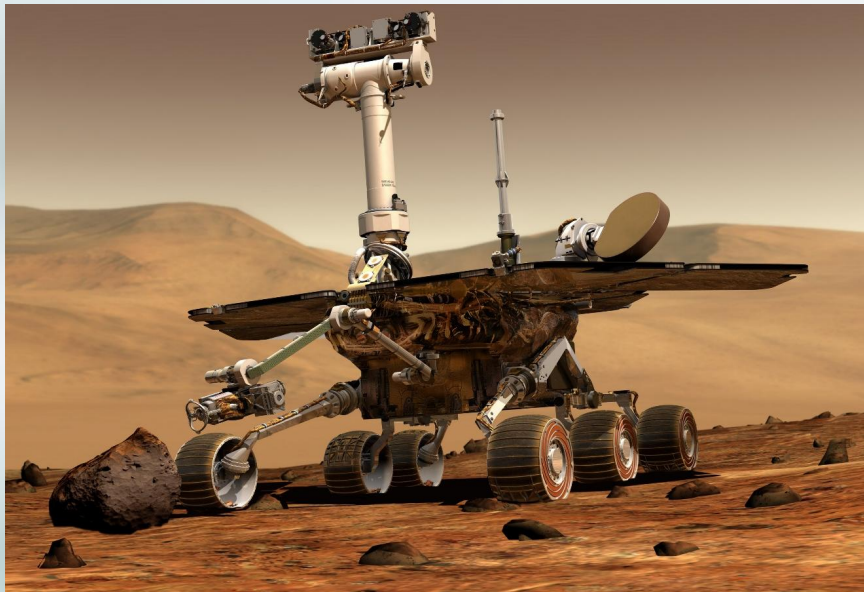
- EPS力矩传感器
- EPS角度传感器
- ABS轮速传感器

磁性传感器的工业应用

磁性传感器的其他应用



磁性传感器@火星探测器



火星探测器上的磁传感器 100% 来自Sensitec（希磁德国）

1. 2004, “勇气号” and “机遇号” 火星探测车
2. 截止2018年1月22日所有传感器无故障工作14年（原计划90天）
3. 2021年2月18日, “毅力号” 登陆火星

磁性传感器@EPS力矩传感器

Task

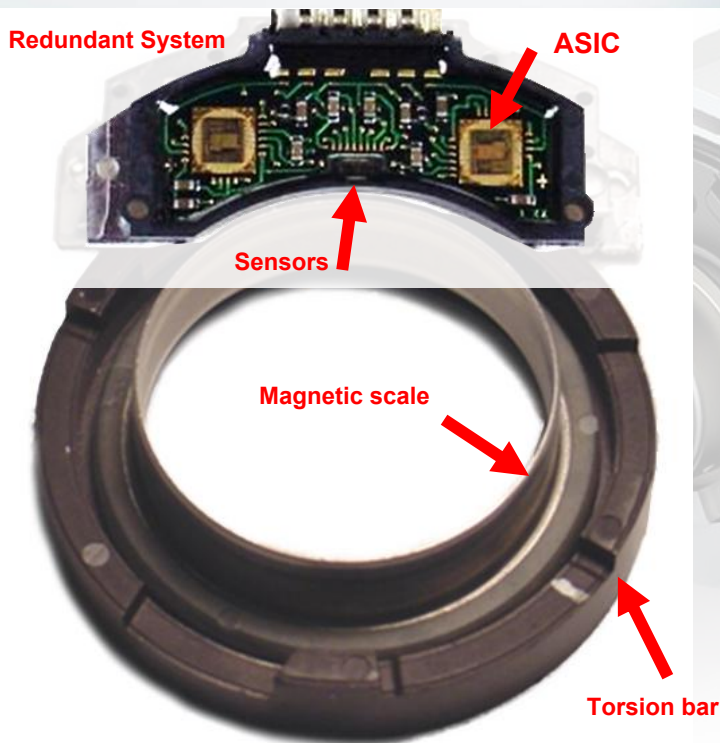
- 转向力矩的检测
- 检测扭力杆的角度

Requirements

- 安装在轴外侧检测
- 角度范围 $\pm 4^\circ$
- 角度分辨率 $< 0,1^\circ$
- 角度精度优于 $0,3^\circ$
- 具有冗余设计

Solution

AMR 角度传感器: AA745



BOURNS



磁性传感器@EPS角度传感器

Task

- 电机角度检测 (MPS)
- EPS中的伺服系统

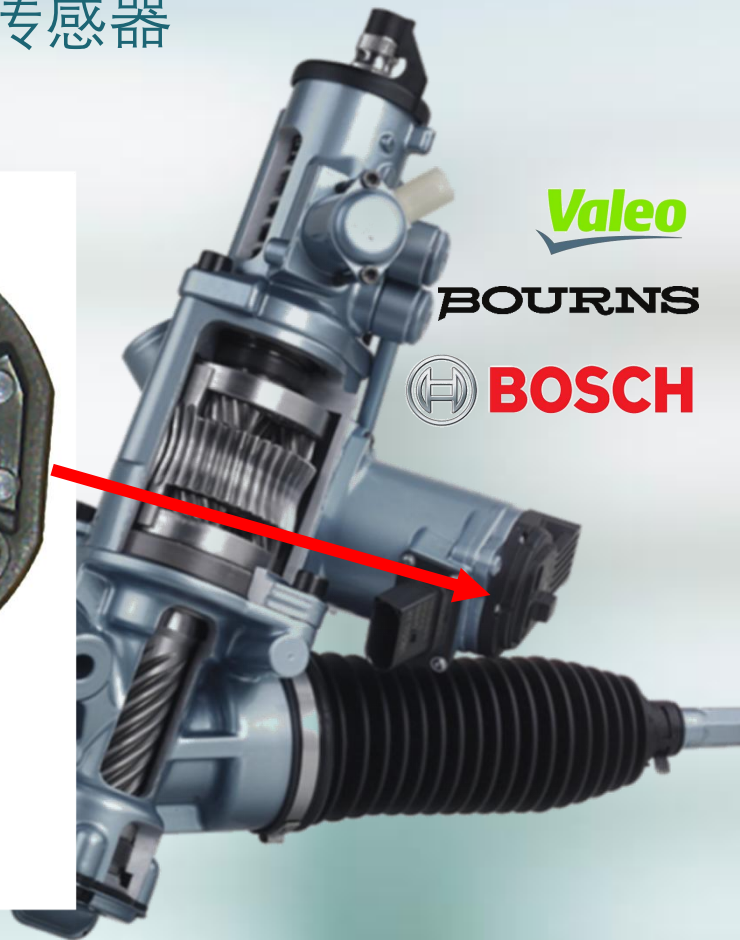
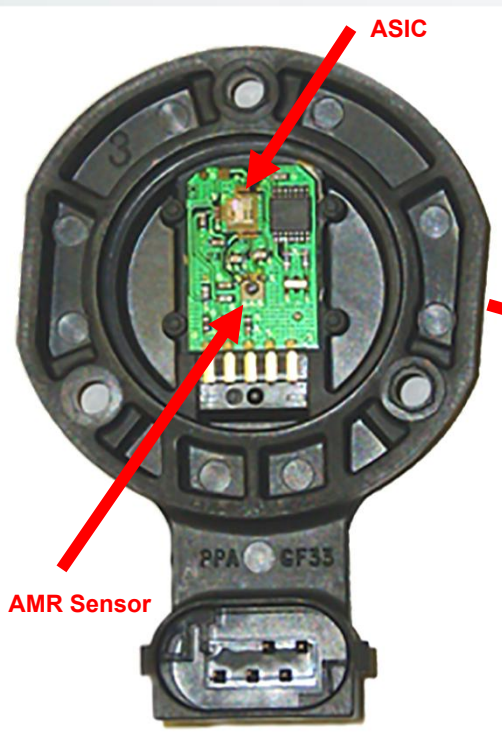
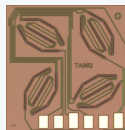
Requirements

- 安装位置为轴端检测
- 最大角度误差优于 0.1°
- 寿命周期 (工作) : 12.000 小时

Solution

轴端检测方案

AMR 角度传感器: AA747 & TA903



磁性传感器@ABS轮速传感器

Task

- 检测每个车轮的速度
- 提供给ABS & ESP安全系统

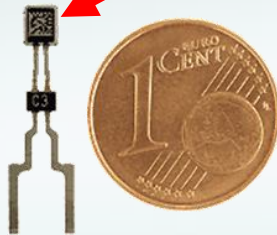
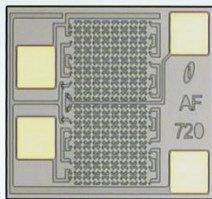
Requirements

- 传感器尺寸的降低
- 传感器成本的控制
- 极高的工作温度 ($T_{\text{junction}} < 195^{\circ}\text{C}$)

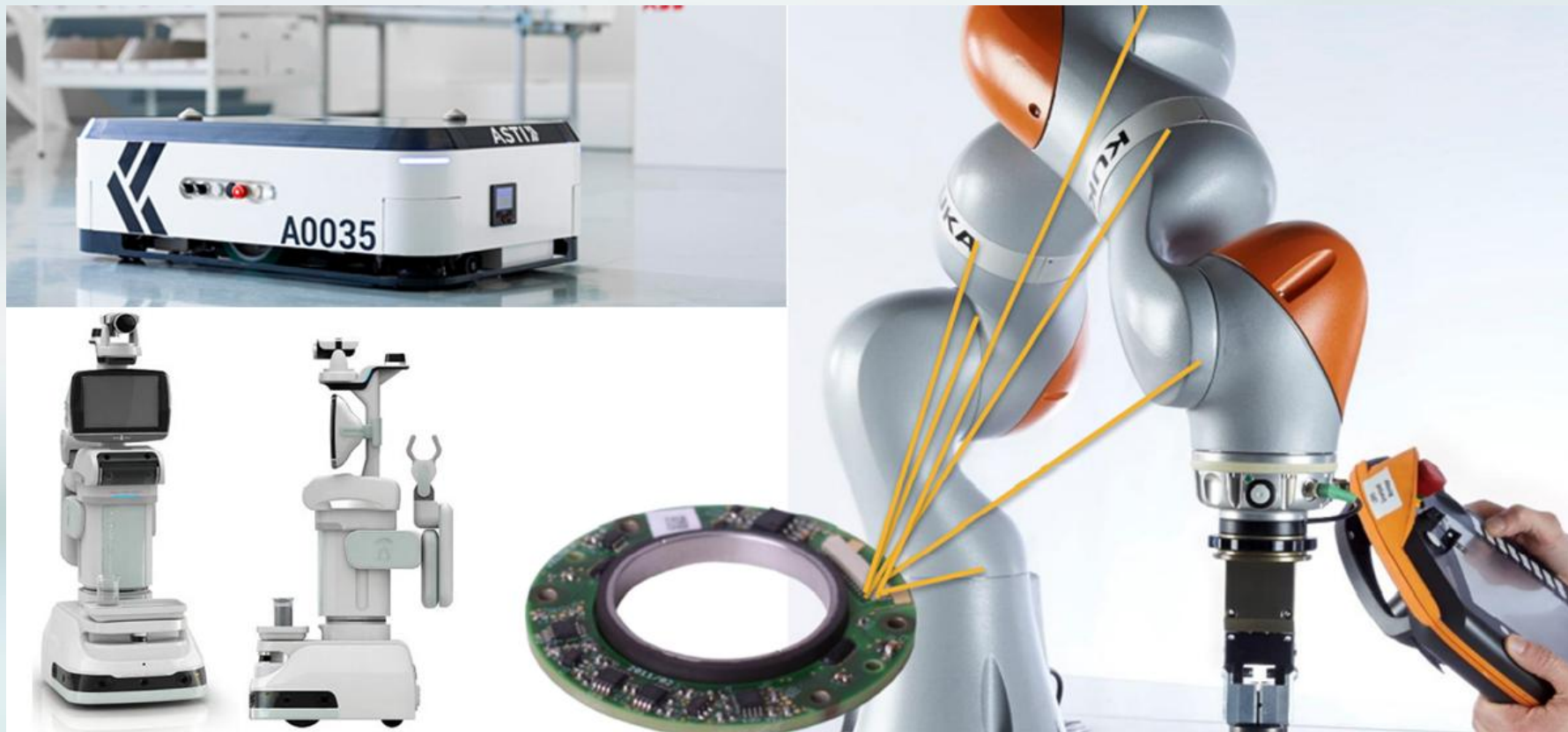
Solution

在轴检测方案 OR 齿轮+背磁检测方案
AMR 传感器: **AF720**

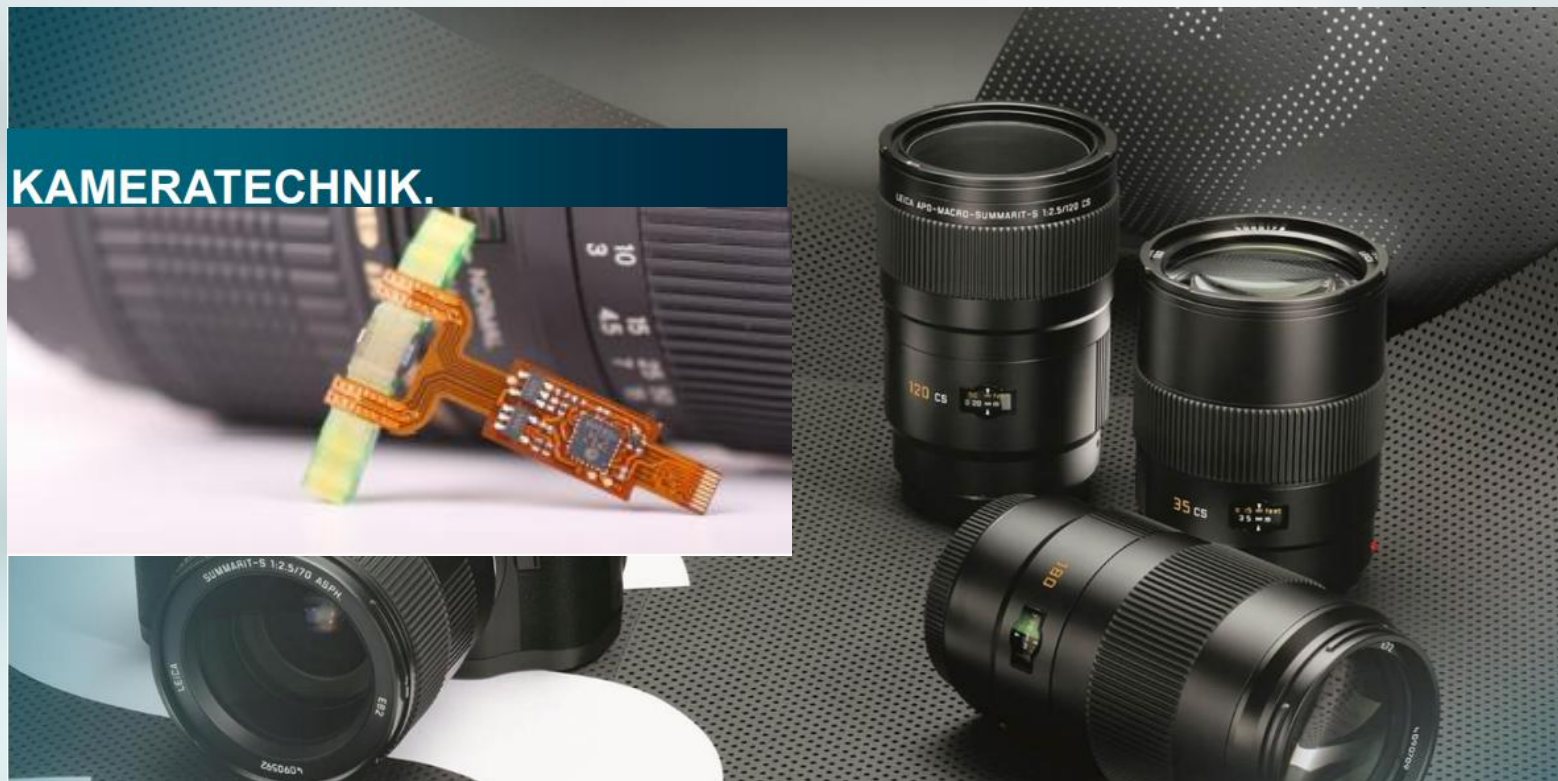
Sensor & ASIC



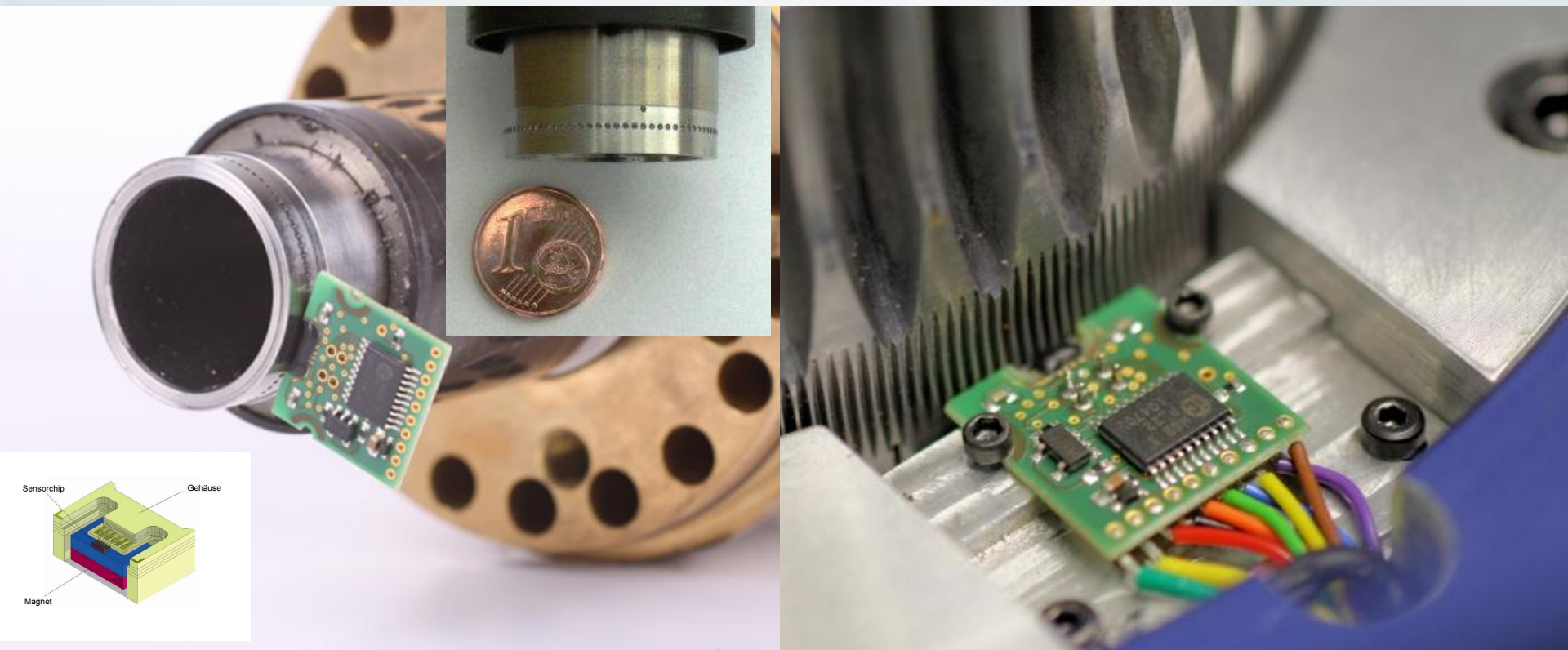
磁性传感器@机器人关节



磁性传感器@单反/摄像机镜头



磁性传感器@电动工具力矩测量



磁性传感器@伺服电机



Brushless DC Motor Series

要求:

内置磁性编码器 & 驱动器设计
允许大的安装误差 (0,7mm)

输出: A/B/Z 信号

分辨率: 1024 PPR ~ 4096 PPR

转速: 8000 T/min

全温区精度: $\pm 0.35^\circ$

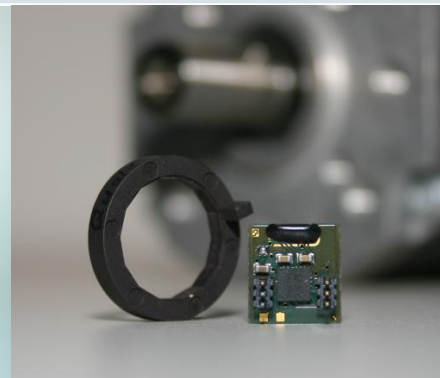
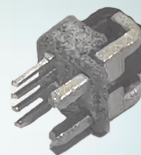
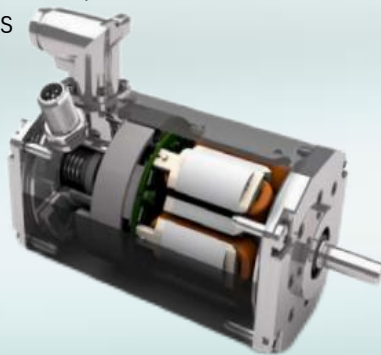
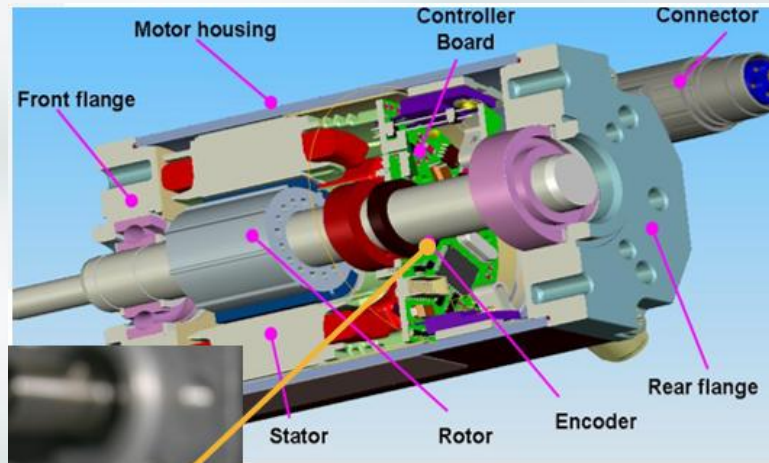
Sensormodule with:

AL796 2mm fixpitch Sensor (incremental)

GF 705 for the z impuls (nose)

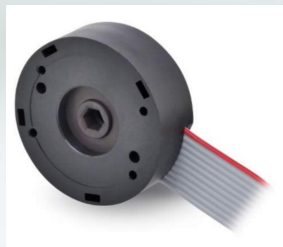
Interpolation-asic (programmable)

Polring with 32 Magnetpoles



磁性传感器@伺服电机

在轴式解决方案，内置传感器型号： LK39



maxon motor

磁性传感器@医用显微镜



磁性传感器@医疗&生物

Switch sensor in defibrillators

Current pulses can save lives



Point-of-care diagnostics

Future diagnostics just like on the Starship Enterprise



磁性传感器@货币磁性防伪

Application

Product

Typical Customers

Bank Note Validation



Based on a special TMR Sensor design and array technology the sensor systems from Lertech Technology Inc. are the leading Systems in the field of Banknote Scanner world wide. In a range from 6mm up to 180 mm test length and a resolution up to 50 dots per inch the systems recognize the magnetic ink pattern and checking the banknotes for authenticity to 100%. The systems Are available up to 64 channels. With the thickness measurement module the banknote can be tested in Micrometer range.



LerTech
乐尔科技
a 100 % daughter from Sinomags



Hyundai MIB International



THANK YOU