

Sensing in Advanced Battery Environments

Understanding Critical Events in Battery Management and How AAS helps serve the market.



About Us

Amphenol Advanced Sensors
providing a broad portfolio of sensing
solutions to help facilitate the control
of critical battery safety and efficient
control management solutions



Sensor Solutions

Amphenol

INTERCONNECT & SENSOR SYSTEMS

Wilcoxon
SENSING TECHNOLOGIES

PIHER *sensing systems*

SGX
SENSORTECH

Piezo
Technologies
An Amphenol Company

Piezoelectric Transducers
Ultrasonics Vibration

Rotary & Linear
Position



Shaft Sensing

Automotive & Industrial Air
Quality

Measurement of toxic gases & oxygen



TELAIRE

THERMOMETRICS
A COMMITMENT TO EXCELLENCE

Gas & Moisture
Temperature

Gas Sensing – CO₂



KAYE

Thermal Validation
& Monitoring



Piezoelectric Ceramics



Potentiometers



Catalytic Bead Pellistors

i2s

Mass Air Flow,
Pressure &
Temp.



Validation system



Medical Devices



MEMS type
gas sensor

Humidity &
Dust sensing



Pressure Sensors

NOVA
SENSOR

Pressure

SST

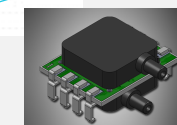


Fluid level &
concentration

Level, Quality,
Pressure, Speed



Ultrasonic,
Speed &
Pressure



digital pressure sensors

ALL SENSORS®

Low pressure

Jan. 2019

Thermal Sensing

Critical events occur during charge and discharge of Lithium Ion Batteries. Critical understanding of the environment and event are required to assure consistent and safe operation.

Batteries are happiest charging, discharging and operating at temperature around 20°C. Excursion from this temperature will impact the aging rate of the battery. Critical control of battery temperature during operation increases the useful life of cells.



Thermal Sensing

Understanding temperature is also critical in charging and discharging of the batteries. Cold temperature charging can damage the cell, therefore in cold environments charging must be gentle at , the slow charge allows the battery to heat due to internal resistance. Temperature measurements are critical to provide indication when slow to rapid charging can occur. Amphenol Advanced Sensors will work with your engineers to help provide the critical control needed across this broad temperature range



Heat Exchanger Systems

Control of critical systems utilizing cold plate, flooded cooling, forced air convection and natural convection require inputs for temperature, pressure, flow etc. AAS provides solution that will allow integration of sensors to the control system. AAS will work with OEM, or any tier integrator to help provide a control solution strategy for advanced battery management



Safety

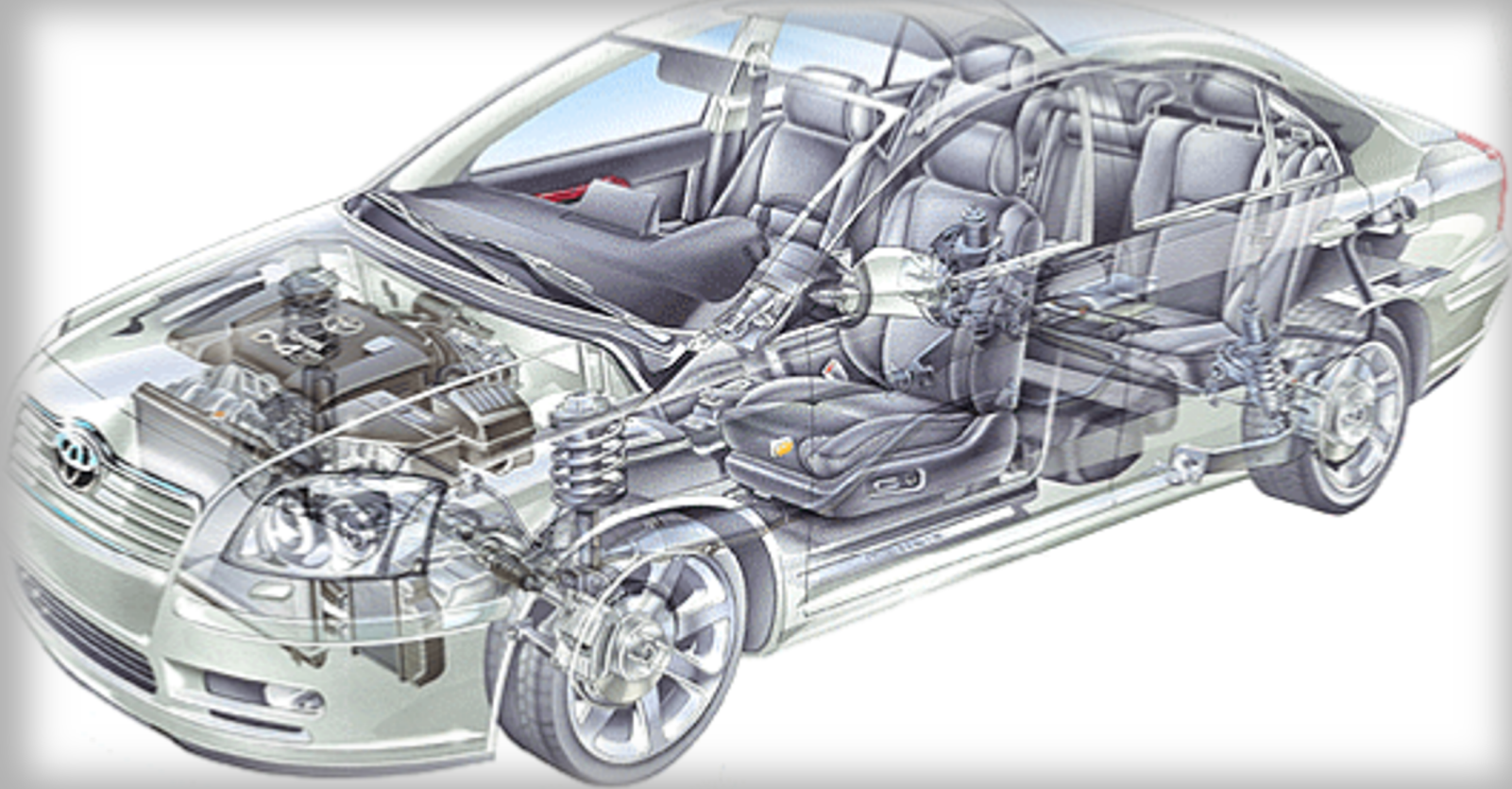
Safety is a critical aspect of all high energy systems. Cell thermal runaway from accidents, manufacturing defects, charge, discharge events is a critical concern for advanced battery systems. Amphenol is working with leading battery OEM's and research institutions to develop cost effective detection of the onset of thermal runaway and the venting of hazardous and flammable gases.



Cell Connection Systems

Along with solutions Amphenol Advanced Sensors is your integration partner for integration of cell connection systems for your battery packs. Amphenol Advanced Sensors combines bus bar technology with required voltage sense leads, integrated fusible links, temperature sensors and noise filtering capacitors . These assembly provide both power and sensing connection into the integrated units





Amphenol Advanced Sensor your partner in sensing and sensing integration.



Thank You

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