



12V BMS - Beyond Batteries

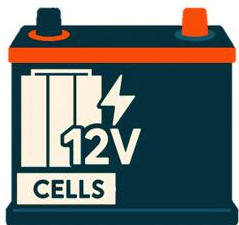
From monitoring to system integration: key trends

ALBA conference
19-20 May 2026, Mainz

Stellantis

Danila Viglione

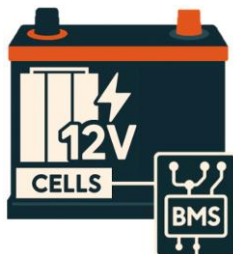
NO BMS



- No smart charging
- No plant management
- No logistic management
- No balancing

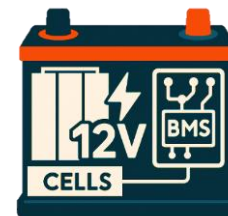
No BMS → No Management

EXTERNAL BMS



- No MOS/switches
- Difficult ASIL calculation
- Same BMS can be used for different batteries
- Better aftersales management

FULLY INTEGRATED BMS



- Easy ASIL calculation: ASIL B and above level
- Component validation: BMS + PACK

FULLY INTEGRATED BMS WITH MOS/SWITCHES

- Applied on Li-Ion for safety requirements
- Proper MOS/switches sizing for cold cranking performance
- MOS and electronics integration with the vehicle

FULLY INTEGRATED BMS WITH DC/DC

- Component as a system
- Complex integration of a system with the vehicle
- Low control from vehicle perspective

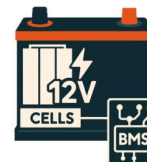
12V BATTERY

ASIL REQUIREMENTS

BMS EXPECTED



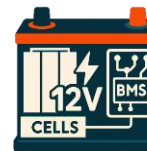
ASIL A AND ↓



EXTERNAL



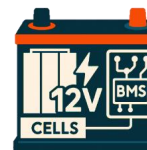
ASIL A AND ↑



FULLY INTEGRATED



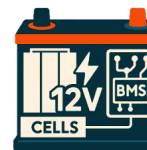
EVERY ASIL LEVEL



FULLY INTEGRATED



EVERY ASIL LEVEL



FULLY INTEGRATED
WITH MOS/SWITCHES