

# ARROK<sup>®</sup>

MODULAR SOLUTION

## HIGH VOLTAGE LITHIUM-ION BATTERY SYSTEM FOR OFF-ROAD VEHICLES

ARROK<sup>®</sup> is a scalable battery solution developed by Saft for the unique requirements of off-road industrial vehicles.

ARROK<sup>®</sup> is based on Saft cells using lithium nickel manganese cobalt oxide (NMC) chemistry. The cells are integrated into a specialized battery design to ensure a high level of safety.

Our cells offer best-in-class energy density and operate reliably over a long cycle life and a wide range of temperatures.



### ⚡ Typical industrial applications

- Construction & mining
- Agriculture
- Material handling
- Urban equipment
- Ground support equipment
- Port equipment

### ⚡ Typical usage

- Traction for off-road electric vehicles
- Power for auxiliary equipment

### ⚡ Key benefits

- Capability to use the same product for different vehicle models to **avoid unnecessary development costs**
- **Increased** availability and **uptime** thanks to on-vehicle fast charging with no need for battery swapping
- **Optimized TCO** with reliable low- maintenance system
- **Future-proof system** thanks to Saft in-house chemistry updates

### ⚡ Key features

- Scalable in voltage and energy
- Ultra-compact design
- Fast charging
- Long life
- Robust casing ready to install directly in vehicle chassis

### ARROK<sup>®</sup> High voltage features

- Battery system with modules and powerbox
- Suitable up to 882 V powertrain
- Energy scalability up to 750 kWh

**saft**

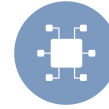
## ⚡ Technical characteristics

Modularity	Max number of ARROK® in series	15
	Max number of ARROK® in parallel	12
	Max scalable voltage	882 V
	Max scalable energy	750 kWh
<b>Battery Management System</b>		
Nominal characteristics at +25°C / +77°F	Capacity at C/5	82 Ah
	Nominal voltage	51 V
	100 % SOC voltage	57 V
	0 % SOC voltage	45 V
	Energy	4,2 kWh
	Volumetric energy	216 Wh/L
Gravimetric energy	123 Wh/kg	
Dimensions	Width	320 mm
	Height	127 mm
	Depth	477 mm
	Weight	34 kg
Performances	Cycling performance	2 500 cycles (80% DOD 1C/1C cycle)
	Operating temperature	- 30°C to + 60°C
	Storage and transportation temperature	- 40°C to + 70°C
Standards	Safety	ISO 26262, IEC 62619, UN 38.3 (transport), ECE R100-2 compatible
	Performances & robustness	IEC 62620, ISO 16750, ISO 12405, ISO 20653
	Electromagnetic compatibility	ECE R10, EN 61000, ISO 16750
	Quality & environment	ISO 9001, ISO 14001



### Safety features

- ISO 26262 – ASIL B
- IP2x connector with poka-yoke
- Handling unit < 60 V



### Powerbox features

- HVIL
- Insulation monitoring
- Pre-charge



### Mechanical features

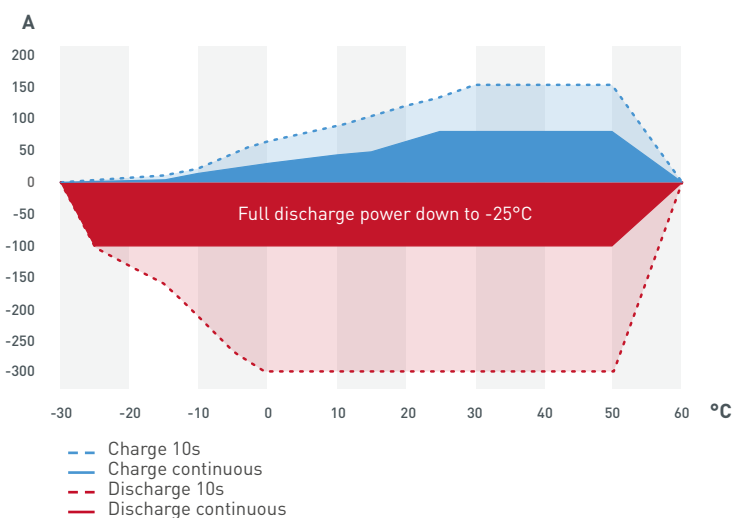
- Versatile fixing
- Robust aluminum construction
- Improved heat dissipation
- IP6K9K



### BMS features

- CAN J1939-2020 standard
- UDS standard for diagnostics
- Single-chip monitoring

## ⚡ ARROK® current limits vs temperature

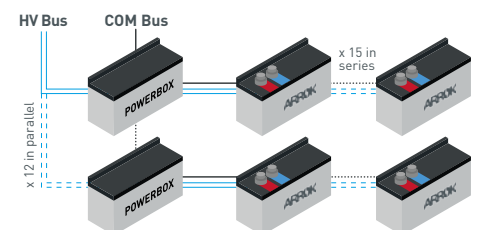


## ⚡ ARROK® HV Module integrates

- Voltage, current & temperature monitoring
- Passive balancing

## ⚡ ARROK® Powerbox integrates

- Battery Management System (external power supply)
- Protection devices and pre-charge
- High Voltage Interlock Loop (HVIL)
- Insulation monitoring



## We understand that you need a reliable battery partner

That's why we manufacture our lithium-ion prismatic cells and ARROK® systems on highly automated assembly lines. With a worldwide presence, local teams and recognized expertise, Saft will support you at every stage of your electrification project.



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