
MSX Ni-Cd battery
compact high power
for railways

Railway product ranges

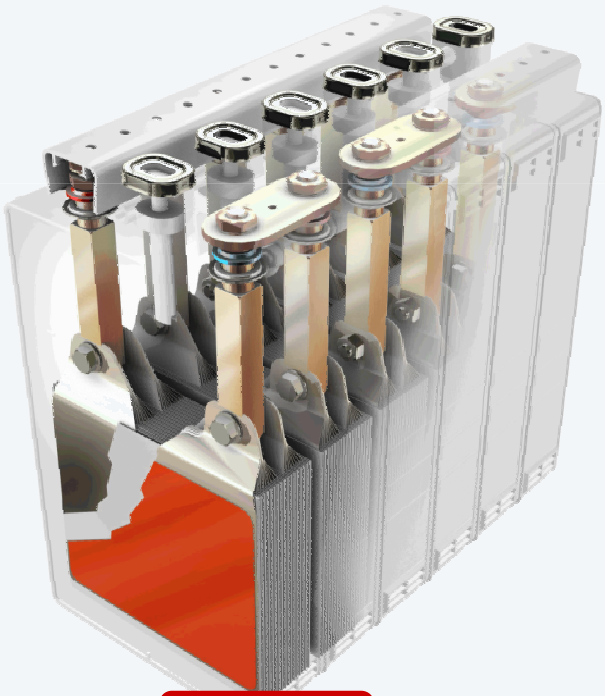
Compactness

Power

SRX power in MRX compactness

MRX

- Compact
- Easy maintenance

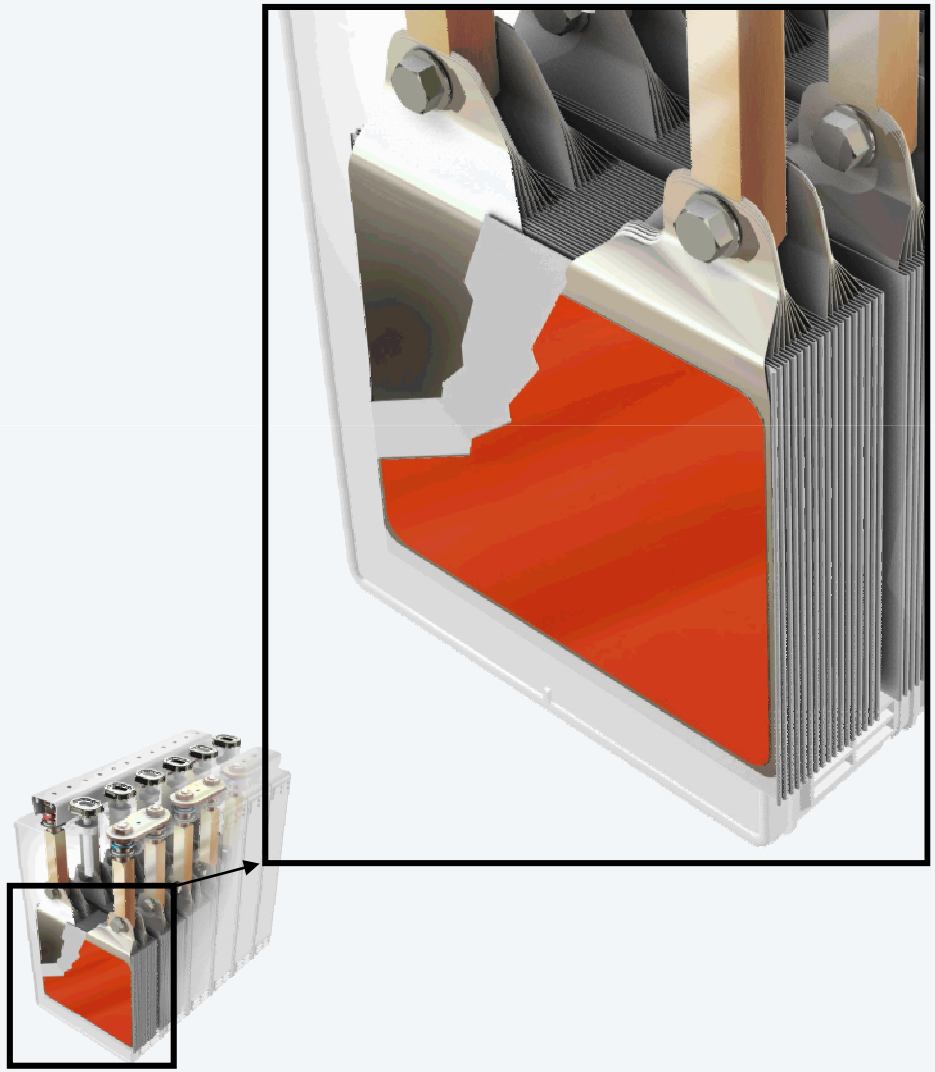


MSX

SRX

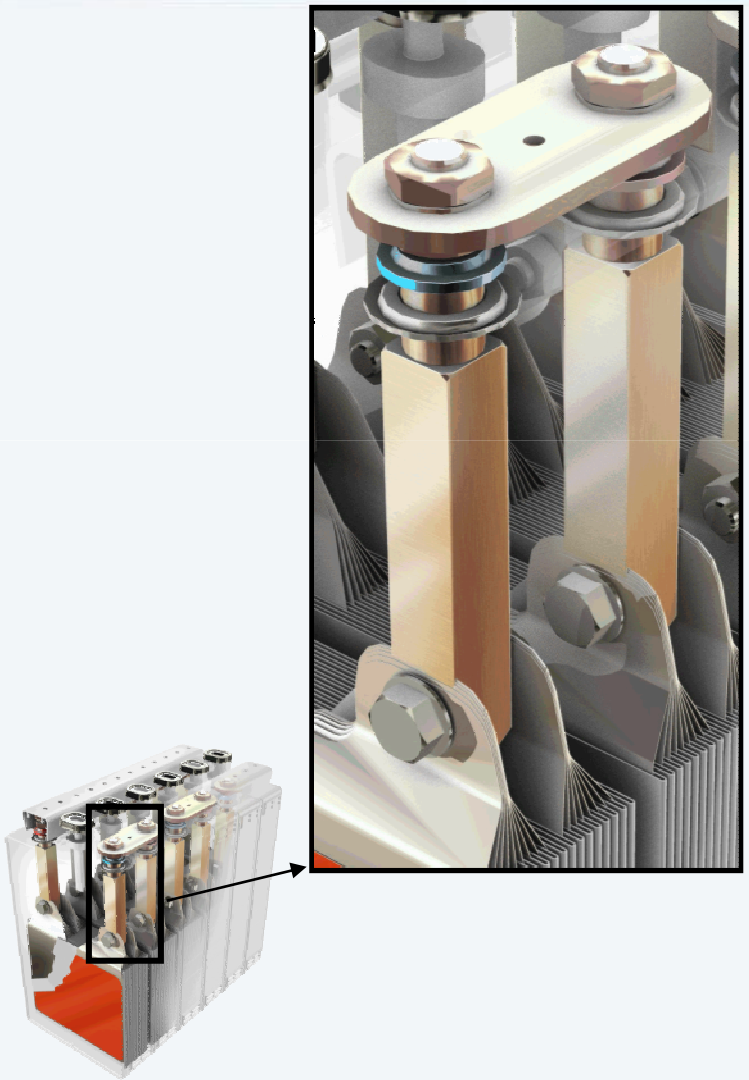
- Powerful
- Field-proven

Saft sintered PBE Ni-Cd



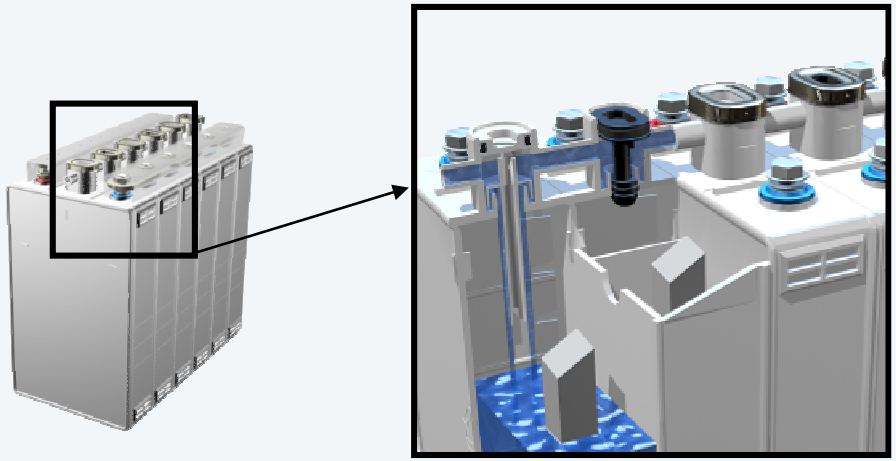
- Sintered Plastic Bounded Electrodes:
  - Compactness
  - Reliability
  - Long life
  - Robust
- Thin plates
  - Powerful electrochemistry
- Ultra thin separator
  - Compact stack
- Improved electrochemistry
  - Chargeability at low temperature
  - Wide operating temperature range

Conductors for high power



- Full copper large section connections:
  - High Power dedicated
  - Peak power ability
- SRX design:
  - Field experience for power application

Block concept



- Modular Block concept:
  - Minimal dimensions for integration in Battery System
  - Easy to assembly
- Integrated Water Filling System:
  - Robust and reliable
  - Easy and minimal maintenance
  - Safe and secure

MSX range: from 70 to 260Ah

- « H » type
- 40% less volume vs SRX
- 30% less weight vs SRX

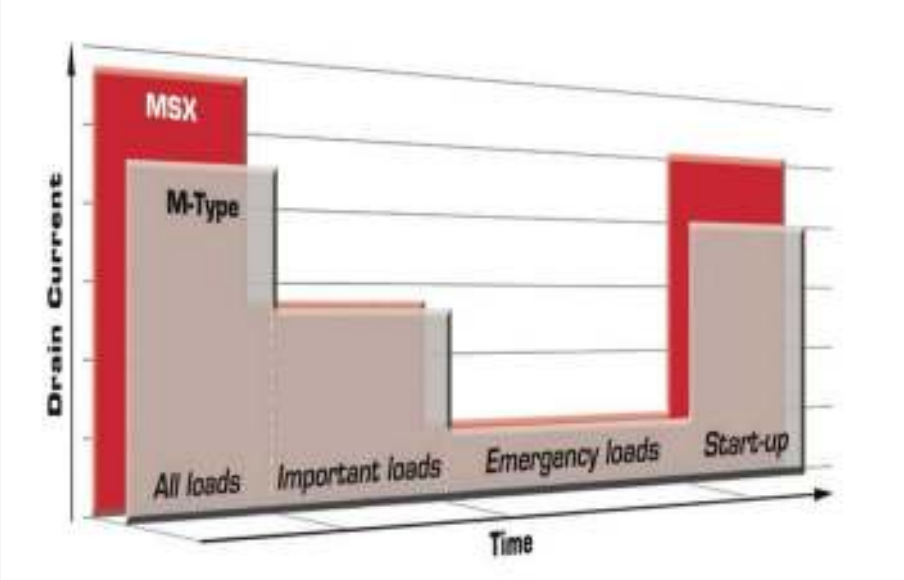
Electric trains

- Urban transport
  - Tramways
  - Tram trains
  - Metro
- Regional transport:
  - EMU
  - DMU
- Intercity
  - Coaches
  - Electric locos
  - High Speed trains
  - Very High Speed trains

Discharge from 30minutes to 3 hours



Electric trains – High power back-up



- Demanding Full load profile
- Power load fonction:
  - Magnetic braking
- Performances at very low temperature

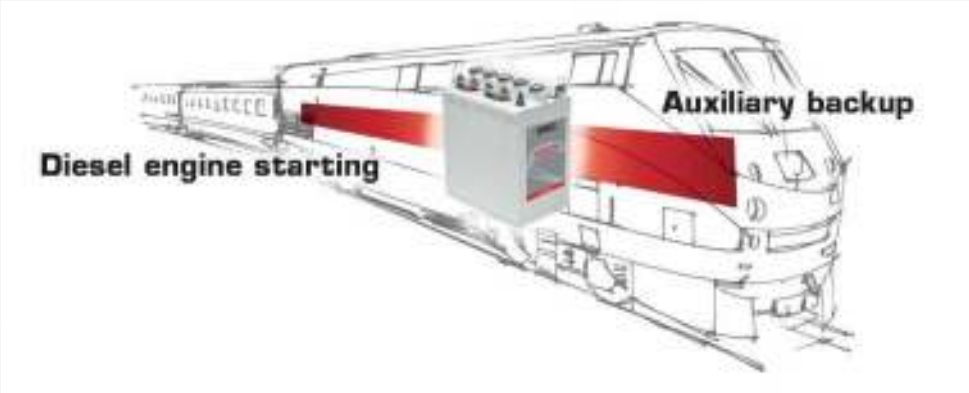
Compactness

Diesel starting

- Diesel Locomotives
  - Freight
  - Passenger
  - Shunting
- Regional transport:
  - DMU

Discharge for seconds to minutes peak discharge

Diesel trains – High power back-up



- Diesel Loco:
  - Compact starting battery
  - Ability to feed auxiliaries
  - Multiple starting
- DMUs:
  - Use the same battery for back-up and starting
  - Stop and starts part of the Diesel units in station

Compactness

Compact high power Ni-Cd

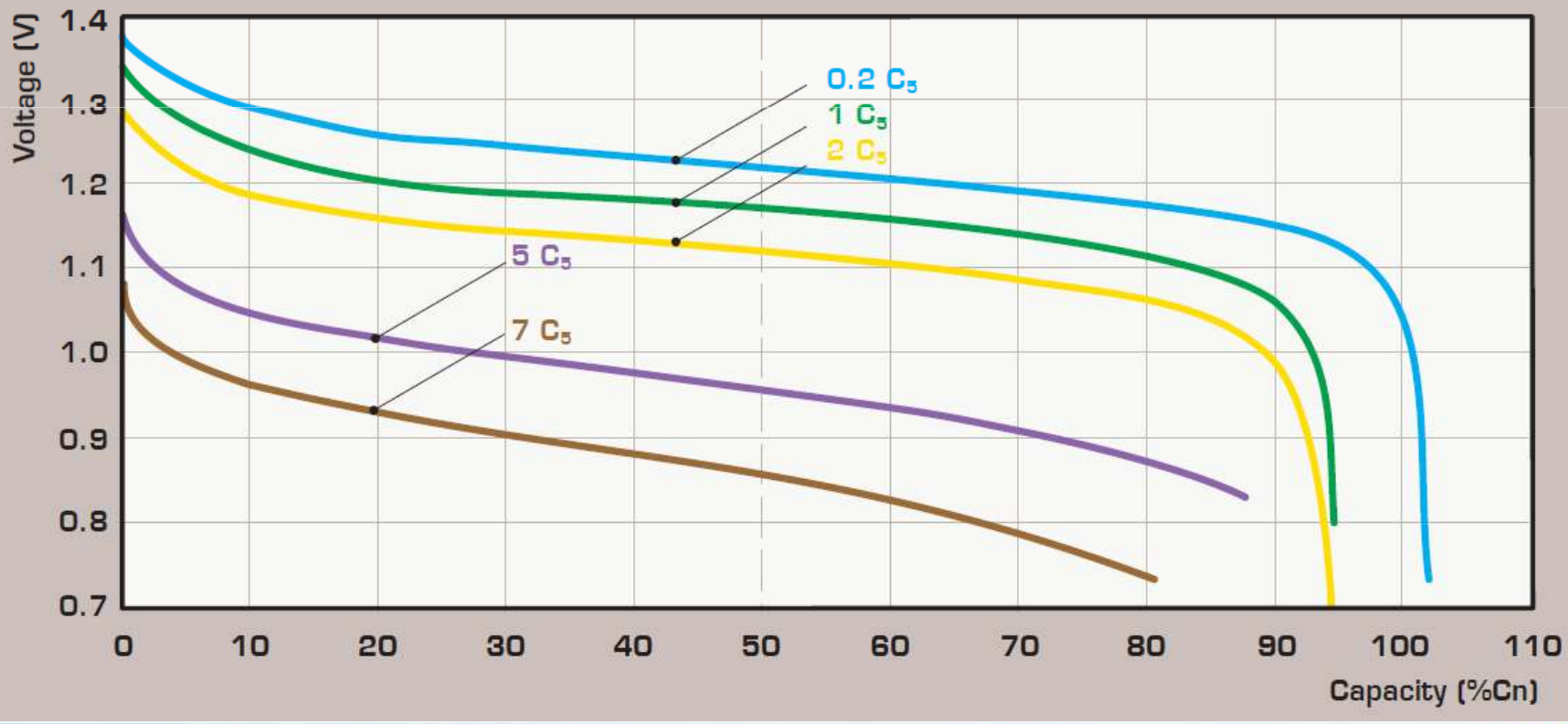
- Brings compactness
- Delivers high power and performances
- Requires minimal and easy maintenance
- Provides reliability and safety
- Offers a low LCC and LCA

MSX performances

Electrical performances

Ideal electrical characteristics from 0.2 C_5Ah to 7 C_5Ah

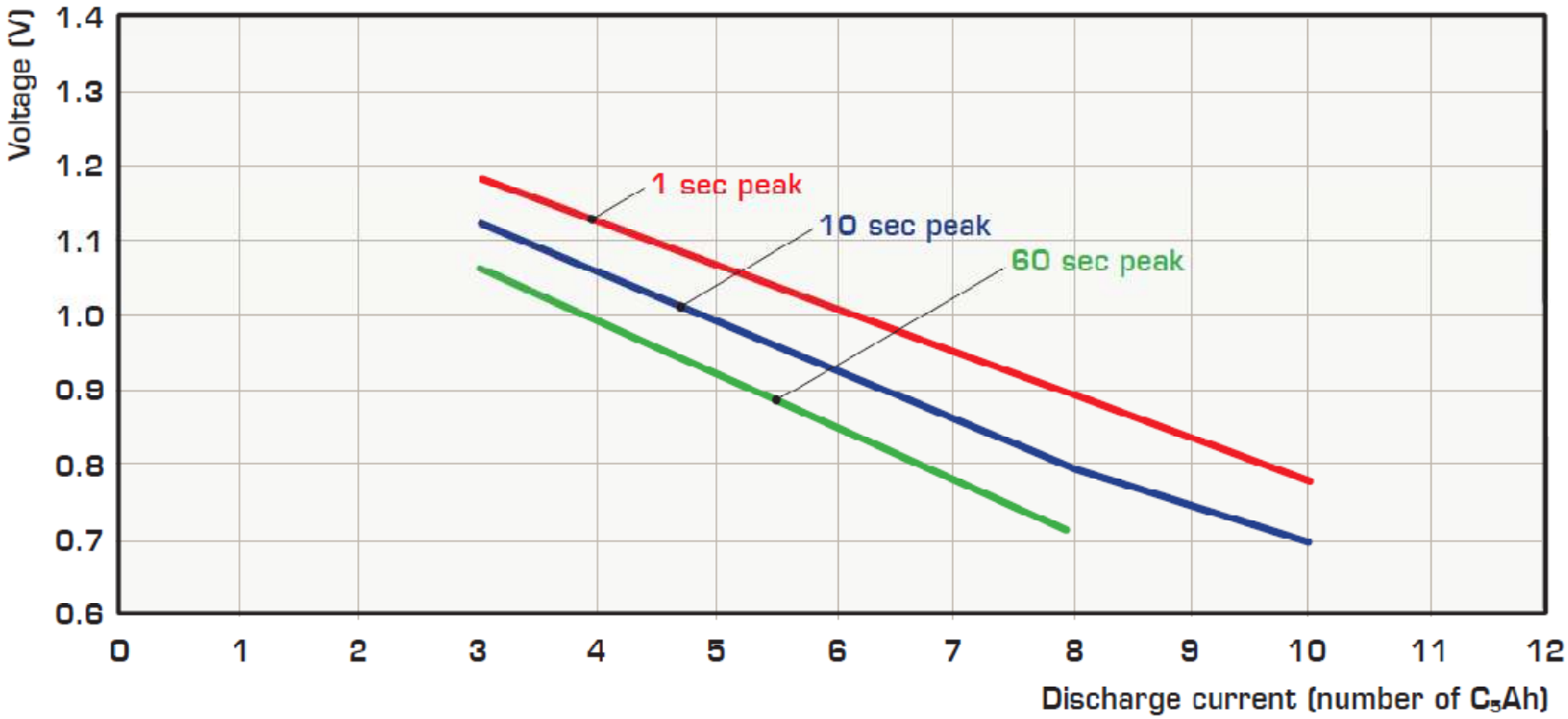
MSX discharge capacity at 0.2 C_5Ah, 1 C_5Ah, 2 C_5Ah, 5 C_5Ah and 7 C_5Ah at 20°C after charging according to IEC 60 623, 1 h rest



Electrical performances

High rate discharge for instant starting

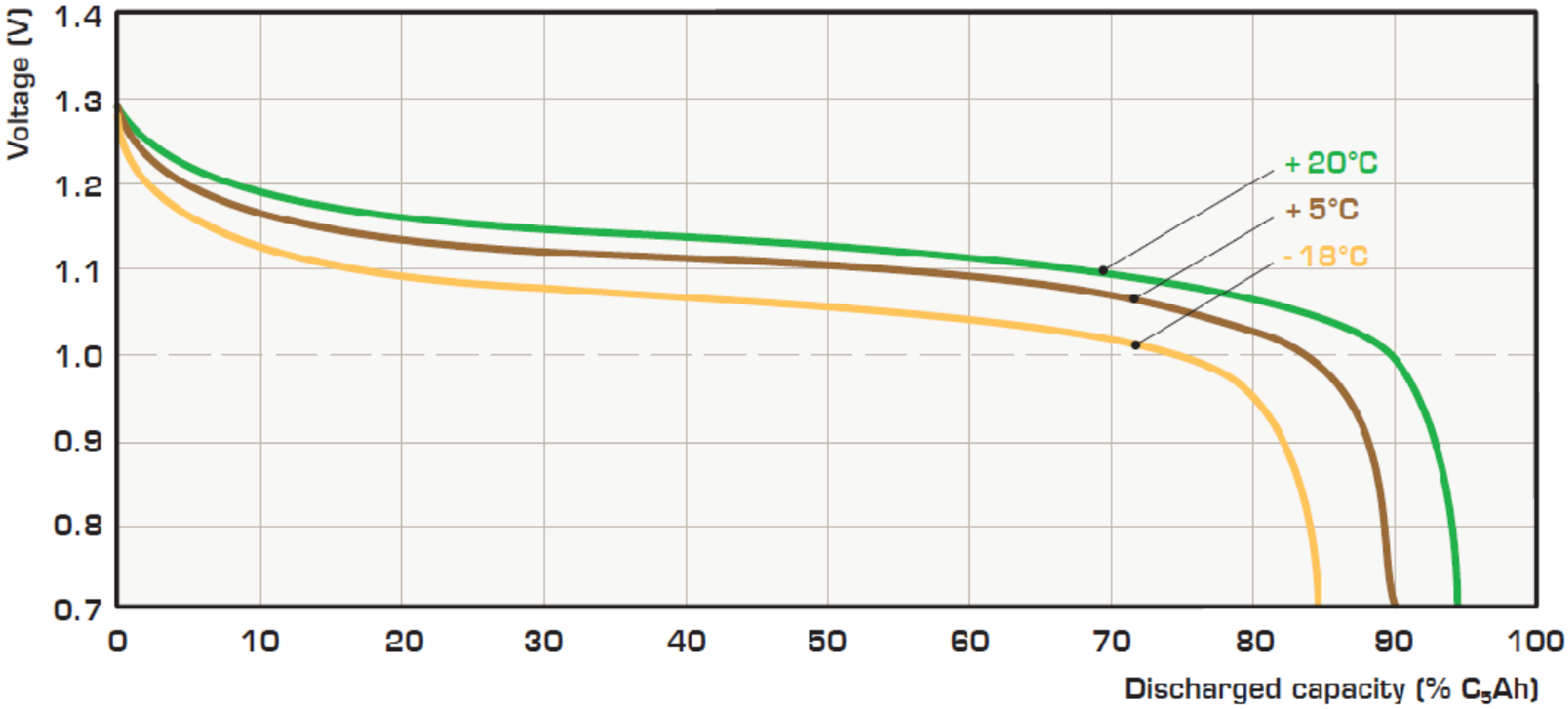
MSX peak discharge during 1 s, 10 s and 60 s at - 20°C
after IEC 60 623 charge, 16 h rest



Electrical performances

Excellent discharge behaviour at various temperatures

MSX discharge capacity at 2 C_5Ah at + 20°C, + 5°C, and - 18°C
after charging according to IEC 60 623, 24 h rest



Electrical performances

Efficient chargeability in an extended temperature window

MSX chargeability at 1.47 V (and temperature compensation)