

SRA Ni-Cd battery

The medium power backup battery for railway applications



SAFT

SRA - Performance and reliability in desert heat or arctic cold



SRA - for when the going gets tough

SRA, Saft's brand new range of Ni-Cd railway batteries for auxiliary backup applications, is the latest development in our ongoing new product investment programme to meet evolving customer needs.

Designed to perform in extreme conditions, SRA comes in three versions: SRA Standard for use between -30°C to $+50^{\circ}\text{C}$, SRA LT for low temperatures (-50°C to $+40^{\circ}\text{C}$) and SRA HT for high temperatures (-20°C to $+65^{\circ}\text{C}$). Having specific ranges for cold and hot climates give the possibility to optimize the solution in extreme temperatures.

SRA's optimized electrical performance, extremely compact cells and very high energy density provide the ideal basis for battery systems that are lighter in weight and occupy less onboard space. Furthermore SRA is fully compatible with Saft's well established range of standardized railway battery systems, with the same fast and easy maintenance procedures.

Saft moves ahead with the railway industry

Saft has over 60 years of experience in delivering onboard energy backup solutions for railway applications with a key emphasis on reliability, safety and security. Saft's full spectrum of services range from supplying individual batteries right through to operating as a global supplier of fully integrated, turnkey battery systems for both new-build and replacement projects.

SRA - Medium power solutions

	Operating temperature range	Capacity range
SRA Standard	-30°C to $+50^{\circ}\text{C}$	75-375 Ah
SRA LT	-50°C to $+40^{\circ}\text{C}$	75-375 Ah
SRA HT	-20°C to $+65^{\circ}\text{C}$	70-350 Ah

Optimize your battery's performance for extreme temperatures

Even in the most extreme conditions, SRA ensures continuous operation of auxiliary systems critical for passenger safety.

- SRA are designed for discharge levels of 2C₅A continuous and 5C₅A peak
- SRA's optimized performance eliminates the need to oversize the battery

Free up your onboard space and save weight

SRA's compact design provides an overall 30% reduction in volume and weight compared with a standard Ni-Cd battery.

- Enables optimized system design for very high energy density
- Cost benefits include more space for passengers and improved fuel efficiency due to lower overall weight

Create the ideal battery for your specific needs

SRA is highly resistant to the shocks and vibrations encountered in railway applications and offers complete flexibility in term of capacity, containers and maintenance systems.

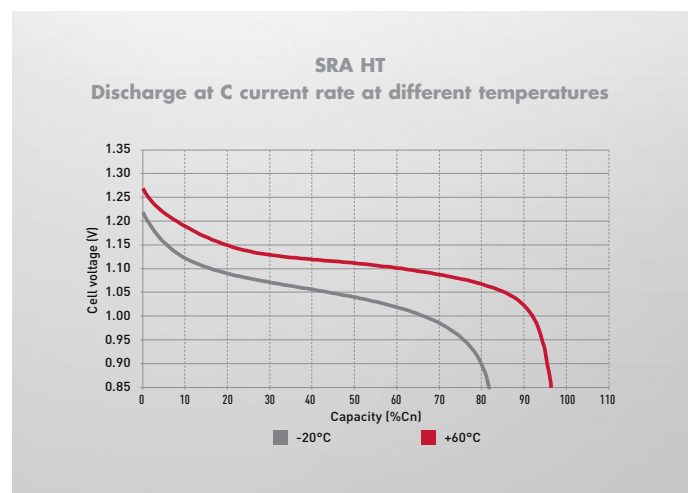
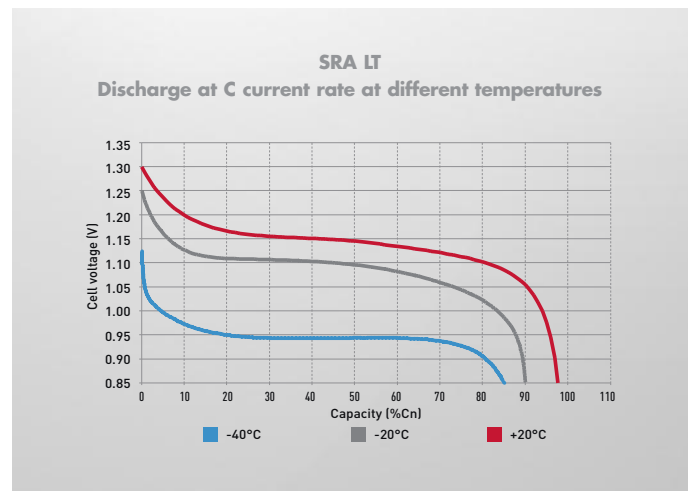
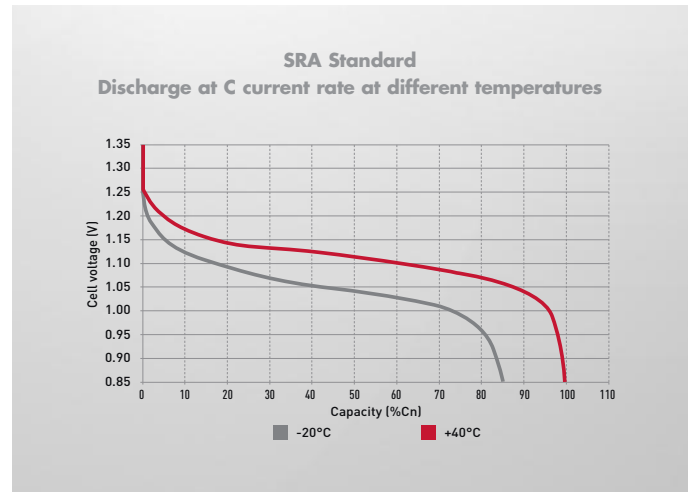
- **Choose your capacity:**
Single cell capacities range from 70 to 375 Ah
- **Choose your container:** Available in various plastic (FRpp, FR, P) and stainless steel containers
- **Choose your maintenance system:**
Optional centralized water filling system

Standard cell design integrates perfectly into your battery system

SRA cells are a perfect match with Saft's railway battery systems.

- Direct fitting within standard systems
- Customized battery boxes also available

Batteries can be integrated into bespoke trays designed to suit specific applications.



SRA FRpp physical characteristics

Capacity			Cell Weight (kg)*	Cell dimensions (mm)*			Weight including crate (kg)*								H	W	Length of crate (mm)*							
SRA Standard	SRA LT	SRA HT		L	H	W	2	3	4	5	6	7	8	2			3	4	5	6	7	8		
75	75	70	2,7	61	303	86			13	16	19	22	25	307	90		254	314	376	436	497			
90	90	85	3,6	86	303	86			16	20	24	28	31	307	90		354	439	526	611	697			
110	110	105	3,9	86	303	86			17	22	26	30	34	307	90		354	439	526	611	697			
125	125	115	4,7	104	303	87		17	22	27	33			307	91	323	426	530	634					
140	140	130	4,9	104	303	87		18	23	29	34			307	91	323	426	530	634					
160	160	150	6,1	78	331	166	14	20	27	33	39	46	52	343	170	163	241	319	397	475	553	631		
190	190	175	6,5	78	331	166	14	21	27	34	41	47	54	343	170	163	241	319	397	475	553	631		
220	220	200	7,3	87	331	166	16	24	32	40	47	55	63	343	170	181	268	355	442	530	616	703		
260	260	245	8,8	103	331	166	19	28	37	47	56			343	170	213	316	419	523	626				
280	280	265	10,2	117	331	166	23	34	44	51	67			343	170	241	358	475	593	709				
310	310	290	10,5	117	331	166	24	35	46	59	70			343	170	241	358	475	593	709				
340	340	315	11,8	139	331	166	27	39	51	64				343	170	285	423	562	701					
375	375	350	12,2	139	331	166	29	41	55	68				343	170	285	423	562	701					

* Values are not contractual

Saft railway batteries conform to all major quality, safety and environmental standards

Electrical:

- Exceeds the medium "M" type requirements of IEC 60 623

Fire & smoke:

- NFF 16101-16102
- DIN 5510-2
- UL 94-V0
- ASTM E 162
- ASTM E 662

Shock & vibration:

- IEC 61 373

Quality:

- ISO 9001
- IRIS
- Saft world class continuous improvement programme

Environment:

- Fully recyclable
- ISO 14001
- RoHS: Although batteries and accumulators are not within the scope of the RoHS directive, Saft has taken voluntary measures to ensure that the substances forbidden by RoHS are not present in the battery, with the exception of the electro-chemical core.
- REACH: The Saft Group has adopted internal procedures to ensure conformity with the European Regulation REACH.

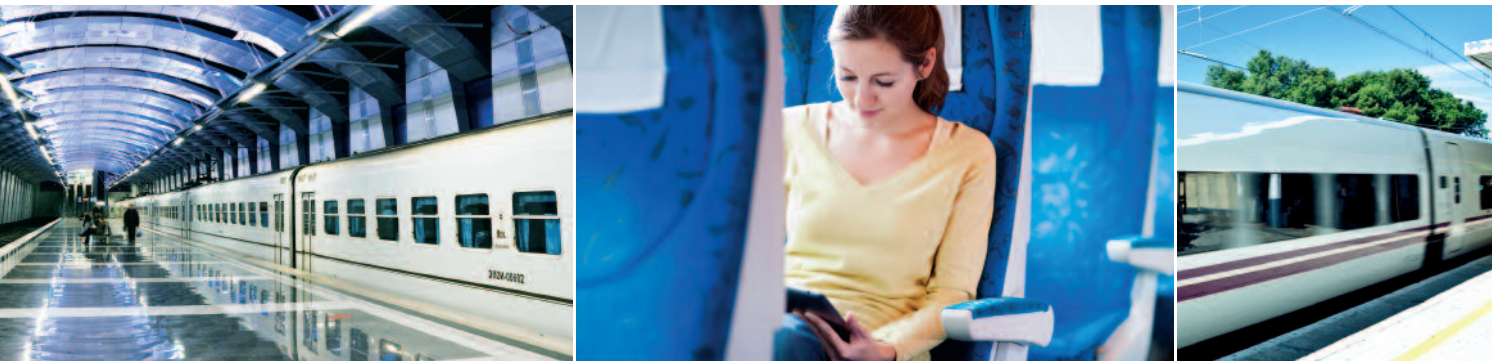
Others:

- DIN 40771
- BS6260



- 1/ Flame arrester vent cap
- 2/ Large electrolyte reserve
- 3/ Sintered positive electrode
- 4/ Separator
- 5/ Plastic bonded negative electrode
- 6/ Container





SRA - reliable backup for auxiliary systems

SRA provides reliable onboard energy backup for auxiliary systems such as:

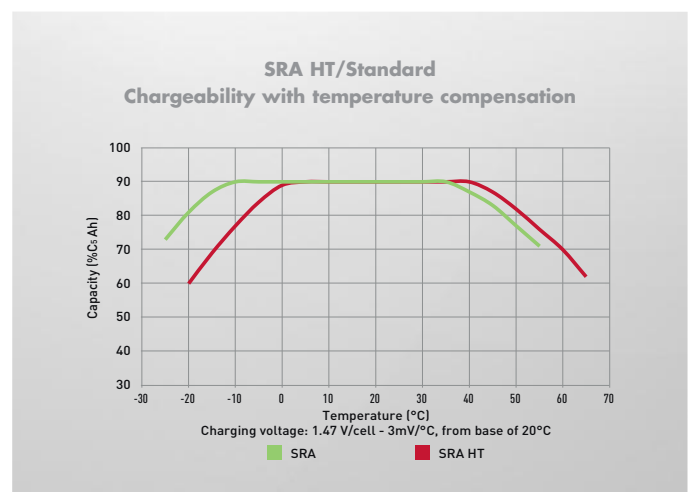
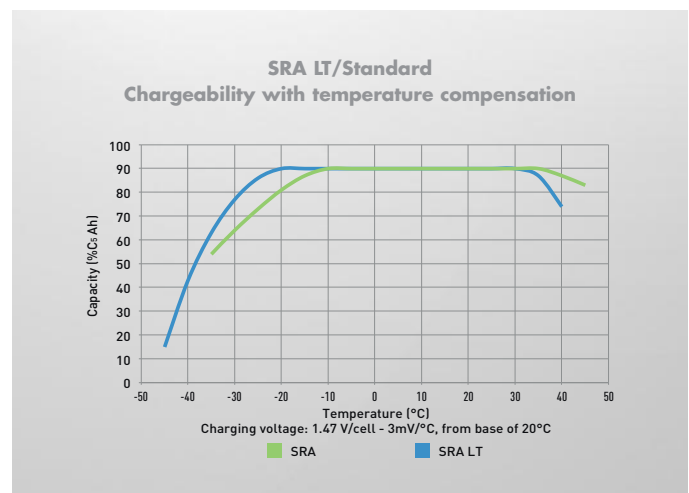
- Passenger safety (lighting, door control and communications)
- Passenger comfort (ventilation, air conditioning, lighting, Wi-Fi)
- Fail-safe train start-up (pantograph lifting, computing, electronics)

SRA is ideally suited for a wide variety of modern trains:

- Urban transport: metros, tramways, tram-trains, airport shuttles
- Regional transport: EMU, DMU
- Intercity transport: high-speed trains, electric locomotives, passenger coaches

Ni-Cd for a long and predictable service life

SRA's robust Ni-Cd construction ensures a reliable and totally predictable service life of over 15 years at + 25°C (+ 77°F). Operation at higher temperatures reduces the life expectancy of any battery. However, this effect is reduced for Ni-Cd batteries. So at + 35°C (+ 95°F), the lifetime reduction for a Ni-Cd battery is 20%, while it reaches 50% for a lead-acid battery.



Saft is committed to the highest standards of environmental stewardship

As part of its environmental commitment, Saft gives priority to recycled raw materials over virgin raw materials, reduces its plants' air and water releases year after year, minimizes water usage, reduces fossil energy consumption and associated CO₂ emissions, and ensures that its customers have recycling solutions for their spent batteries.

Regarding industrial nickel-based batteries, Saft has had partnerships for many years with collection companies in most EU countries. This collection network receives and dispatches our customers' batteries at the end of their lives to fully approved recycling facilities, in compliance with the laws governing trans boundary waste shipments.

This collection network meets the requirements of the EU batteries directive. A list of our collection points is available on our web site. In other countries, Saft assists users of its batteries in finding environmentally sound recycling solutions. Please contact your sales representative for further information.



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