

# Tel.X – High density nickel-cadmium battery

## Tangible benefits for modern telecom networks



The new generation of decentralised telecom networks requires back-up power capable of meeting specialised needs in remote and demanding outdoor applications.

As the market changes, Saft's Tel.X nickel-cadmium battery has also evolved with improved mechanical and electrical characteristics. It is ideally suited for applications including cabinets and end terminals in fibre-optic networks offering triple-play services as well as **BTS (Base Transceiver Station)** and **BSC (Basic Station Controller)** installations in wireless networks.



### Specifically for telecom

Tel.X is a high-energy, long-life, maintenance-free nickel-cadmium battery designed to ensure maximum reliability and minimum Total Cost of Ownership (TCO). It performs over a very wide temperature range and in uncontrolled environments with no need for water replenishment.

Tel.X is compact, modular and compatible with existing telecom equipment. It represents a simple and direct replacement for troublesome VRLA batteries, and promises total reliability. Unlike VRLA, Tel.X's robust, well-proven Ni-Cd construction and engineered electrolyte will not degrade, cannot suffer from sudden death, and will continue efficiently to operate in harsh conditions.

### Benefits

- **Long life** – more than 14 years at + 40°C (+ 104°F).
- **Reliable** – robust construction and nickel-cadmium's unique electrochemistry assure operation with total peace of mind.
- **Maintenance-free** – no topping-up required.
- **High energy density** – providing up to 100 Wh/L; 30 % lighter than a VRLA battery.
- **Less than 20 minutes installation** – simple modular design is easy to fit in cabinets; well adapted to 19" and 23" racks.
- **Temperature resistant** – operating from – 20°C to + 50°C (– 4°F to + 122°F), and from – 50°C to + 70°C (– 58°F to + 158°F) for short durations.
- **No active cooling required** – even in harsh environments.
- **Compatible with existing telecom equipment** – temperature compensated voltage from rectifier is not required.
- **Stable performance** – none of the corrosion, sudden death and thermal runaway risks associated with VRLA.
- **Good storage capability.**
- **Easy to recycle.**



# Tel.X – designed for telecom markets

## Extremely long life

Tel.X is built around Ni-Cd technology: mature, highly reliable, and proven in telecom applications for around 20 years.

Ni-Cd will not suffer from sudden death and will not corrode during operation. Tel.X retains its structural integrity and performance throughout its life.

Tel.X tolerates elevated temperatures of up to + 50°C (+ 122°F) and will operate at + 40°C (+ 104°F) for more than 14 years. At lower temperatures and in normal operating conditions, life expectancy can extend beyond 20 years. The battery can continue to operate for short durations from – 50°C to + 70°C (– 58°F to + 158°F), owing to its robust internal steel construction and its engineered electrolyte, optimised for exceptional conditions.

Tel.X is your best insurance against unexpected power outages and assures your application of extremely high levels of operational reliability.

## Extended performance, maintenance-free

For telecom installations sited in remote or decentralized locations, minimised maintenance and guaranteed performance are vital for the quality of the service to decrease the operational cost and reduce the maintenance manpower.

Tel.X is an advanced power back-up solution integrating high charge efficiency, good cycling capability, even at deep level, and all common benefits of Ni-Cd technology customised for telecom activity. The system's low pressure venting system reduces water consumption in service to nearly nothing, without affecting its good performance and long duration life.

As a consequence, topping-up is not required during the life of the battery, though the Tel.X design allows for water addition under exceptional circumstances.

Saft recommends periodic checks of the charging voltage (typically 1.43 V/cell), but beyond this, Tel.X requires no further attention once installed.

## Protective cover

Terminals and inter-cell connectors of a Tel.X battery string are protected and kept clean. This 'dead top' is in line with EN 50272-2 (safety) with IP2 level, eliminating any detrimental effects of external operating conditions.

## Easy to install, simple to use

Tel.X is designed in a compact, modular format and averages 30 % less weight than a VRLA battery. It offers higher energy in lower volume, permits fast, simple and direct replacement for VRLA with regard to available space and charging requirements, and is well adapted to 19" and 23" racks.

Tel.X will fit most existing compartments and cabinets without the need for any modifications and will provide extended high energy performance of up to 100 Wh/L.



In enclosures without ventilation, a central gassing system is available as an option to vent gases to a central exhaust port.

### A range of possibilities

The Tel.X range is available from 80 Ah to 180 Ah in modular construction to suit your capacity needs. Each module comprises 3 to 10 cells in flame retardant material UL-94 V0 and lifting handle to facilitate easy handling and installation.

Tel.X is **qualified to NEBS level III**, the highest safety and functional standards from Telcordia, and is designed to meet the environmental requirements of GR-3108, the performance requirements of GR-3020 and IEC 60623.

### Sustainable design

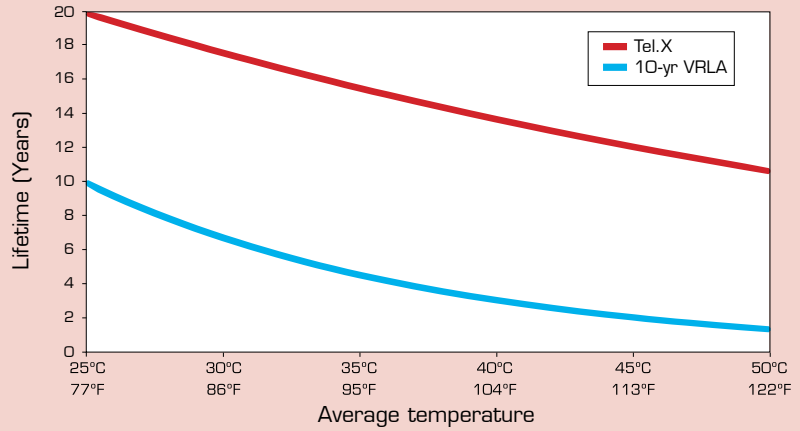
The whole life cycle of Tel.X is considered closely during all phases of development, from manufacturing to industrial operations and recycling.

Tel.X manufacture consumes significantly less upstream energy and its advanced design reduces still further the environmental impact of waste processing.

In operation, Tel.X contributes to significantly less energy consumption during its useful life. Its excellent cycling profile based on a highly efficient float charge regime contributes directly to reduced peripheral energy consumption, including cabinet air conditioning and maintenance.

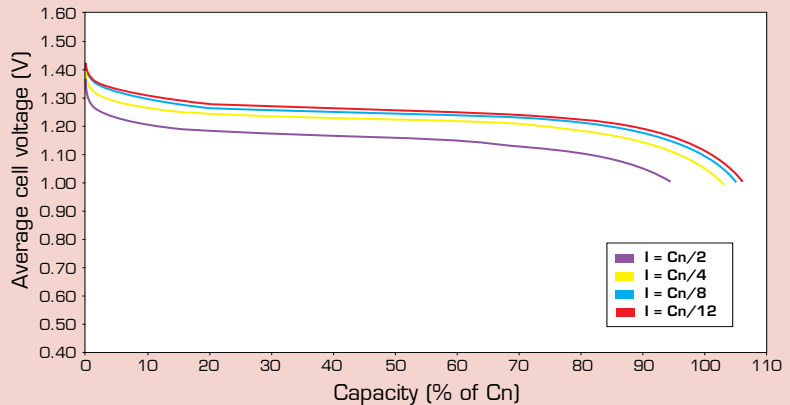


### Effect of temperature on battery life

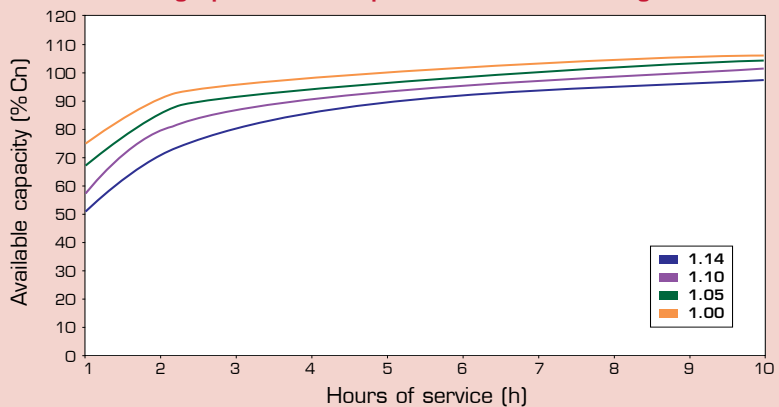


### Discharge characteristics

Discharge at + 25°C / + 77°F at different discharge rates after 24 h charge at + 25°C / + 77°F at 1.43 V/cell



### Discharge performance per different end voltage



# Tel.X discharge data – Watts

Performance in **Watt** after a constant voltage charge between 1.43 to 1.45 V/cell for 24 h at +20°C to +25°C (+68°F to +77°F) available charge current 0.15 C<sub>g</sub>A.

**Final voltage: 1.00 V/cell**

Type	C <sub>g</sub> (Ah)*	Hours									
		1	2	3	4	5	8	10	12	18	24
TLX 80	80	61.5	41.6	30.5	24.0	19.5	13.2	10.7	8.9	5.9	4.4
TLX 100	100	75.7	52.1	38.1	30.0	24.3	16.5	13.3	11.1	7.4	5.6
TLX 150	148	106.0	77.7	56.5	44.3	36.0	24.5	19.7	16.5	11.1	8.2
TLX 180	180	127.8	94.5	68.6	53.9	43.8	29.8	24.0	20.1	13.4	10.0

**Final voltage: 1.05 V/cell**

Type	C <sub>g</sub> (Ah)*	Hours									
		1	2	3	4	5	8	10	12	18	24
TLX 80	80	56.1	40.8	29.9	23.4	19.0	13.0	10.4	8.7	5.8	4.3
TLX 100	100	69.3	51.0	37.2	29.2	23.8	16.2	13.1	10.9	7.3	5.4
TLX 150	148	98.3	75.5	54.7	43.3	35.2	24.0	19.3	16.2	10.9	8.0
TLX 180	180	118.8	91.8	66.4	52.6	42.8	29.1	23.5	19.7	13.1	9.7

**Final voltage: 1.10 V/cell**

Type	C <sub>g</sub> (Ah)*	Hours									
		1	2	3	4	5	8	10	12	18	24
TLX 80	80	51.7	38.1	28.2	22.5	18.4	12.4	10.2	8.5	5.7	4.3
TLX 100	100	64.2	47.3	35.1	28.2	23.0	15.6	12.7	10.6	7.1	5.4
TLX 150	148	92.8	68.2	51.5	41.7	34.1	23.0	18.9	15.7	10.6	7.9
TLX 180	180	112.5	82.7	62.6	50.7	41.4	28.0	22.9	19.1	12.8	9.7

**Final voltage: 1.14 V/cell**

Type	C <sub>g</sub> (Ah)*	Hours									
		1	2	3	4	5	8	10	12	18	24
TLX 80	80	45.8	33.6	26.0	21.7	17.7	12.1	9.8	8.2	5.5	4.1
TLX 100	100	55.9	41.6	32.4	27.2	22.2	15.2	12.3	10.2	6.8	5.1
TLX 150	148	76.2	59.2	47.6	40.3	32.8	22.5	18.2	15.2	10.1	7.5
TLX 180	180	91.5	71.6	57.8	48.9	39.9	27.3	22.1	18.4	12.3	9.2

\*Nominal capacity is obtained after a constant voltage charge (I-U) of 1.45 V/cell (24 h at +25°C/+77°F) followed by a discharge (at the discharge rate corresponding to 8 h autonomy) down to 1.1 V/cell.

# Tel.X discharge data – Amperes

Performance in **Ampere** after a constant voltage charge between 1.43 to 1.45 V/cell for 24 h at +20°C to +25°C (+68°F to +77°F) available charge current 0.15 C<sub>B</sub>A.

**Final voltage: 1.00 V/cell**

Type	C <sub>B</sub> (Ah)*	Hours									
		1	2	3	4	5	8	10	12	18	24
TLX 80	80	60.0	36.5	25.6	19.7	15.8	10.6	8.5	7.1	4.8	3.6
TLX 100	100	73.9	45.7	32.0	24.6	19.8	13.3	10.7	8.9	5.9	4.4
TLX 150	148	103.7	68.1	47.4	36.4	29.3	19.6	15.8	13.2	8.8	6.6
TLX 180	180	124.8	82.9	57.6	44.2	35.6	23.9	19.2	16.0	10.7	8.0

**Final voltage: 1.05 V/cell**

Type	C <sub>B</sub> (Ah)*	Hours									
		1	2	3	4	5	8	10	12	18	24
TLX 80	80	52.4	35.0	24.9	19.2	15.5	10.4	8.4	7.0	4.7	3.4
TLX 100	100	64.8	43.7	31.0	23.9	19.3	13.0	10.5	8.7	5.8	4.3
TLX 150	148	92.1	64.7	45.5	35.4	28.6	19.3	15.5	12.9	8.6	6.3
TLX 180	180	111.2	78.7	55.2	43.1	34.8	23.4	18.8	15.7	10.5	7.7

**Final voltage: 1.10 V/cell**

Type	C <sub>B</sub> (Ah)*	Hours									
		1	2	3	4	5	8	10	12	18	24
TLX 80	80	46.4	32.3	23.3	18.4	14.9	10.0	8.1	6.8	4.5	3.4
TLX 100	100	57.6	40.1	29.1	23.0	18.6	12.5	10.2	8.5	5.7	4.3
TLX 150	148	83.3	57.9	42.7	34.1	27.6	18.5	15.1	12.6	8.4	6.3
TLX 180	180	100.9	70.1	51.8	41.4	33.6	22.5	18.3	15.3	10.2	7.7

**Final voltage: 1.14 V/cell**

Type	C <sub>B</sub> (Ah)*	Hours									
		1	2	3	4	5	8	10	12	18	24
TLX 80	80	41.0	28.5	21.5	17.4	14.2	9.7	7.8	6.5	4.3	3.2
TLX 100	100	50.2	35.2	26.8	21.8	17.8	12.2	9.8	8.2	5.4	4.0
TLX 150	148	68.5	50.3	39.4	32.3	26.3	18.0	14.5	12.1	8.0	6.0
TLX 180	180	82.1	60.7	47.9	39.3	32.0	21.9	17.6	14.7	9.8	7.3

\*Nominal capacity is obtained after a constant voltage charge (I-U) of 1.45 V/cell (24 h at +25°C/+77°F) followed by a discharge (at the discharge rate corresponding to 8 h autonomy) down to 1.1 V/cell.

# Tel.X range

Type	Voltage (V)	Rated capacity C <sub>5</sub> Ah *	Nominal capacity C <sub>8</sub> Ah **	Maximum dimensions						Weight per block	
				(mm)	L (in)	(mm)	W (in)	(mm)	H (in)	kg	lbs
TLX 80-3	3.6	87	80	127	5.0	105	4.13	254	10	6.6	14.6
TLX 80-4	4.2	87	80	166	6.6	105	4.13	254	10	8.8	19.4
TLX 80-5	6.0	87	80	206	8.1	105	4.13	254	10	10.9	24.0
TLX 80-6	7.2	87	80	245	9.7	105	4.13	254	10	13.0	28.7
TLX 80-7	8.4	87	80	285	11.3	105	4.13	254	10	15.0	33.1
TLX 80-8	9.6	87	80	325	12.8	105	4.13	254	10	17.0	37.5
TLX 80-9	10.8	87	80	364	14.4	105	4.13	254	10	19.0	42.0
TLX 80-10	12.0	87	80	404	15.9	105	4.13	254	10	21.0	46.3
TLX 100-3	3.6	108	100	154	6.1	105	4.13	254	10	8.2	18.1
TLX 100-4	4.2	108	100	202	8.0	105	4.13	254	10	10.9	24.1
TLX 100-5	6.0	108	100	251	10.0	105	4.13	254	10	13.5	29.8
TLX 100-6	7.2	108	100	299	11.8	105	4.13	254	10	16.1	35.5
TLX 100-7	8.4	108	100	348	13.7	105	4.13	254	10	18.6	41.0
TLX 100-8	9.6	108	100	397	15.7	105	4.13	254	10	21.1	46.6
TLX 100-9	10.8	108	100	445	17.6	105	4.13	254	10	23.6	52.0
TLX 100-10	12.0	108	100	494	19.5	105	4.13	254	10	26.0	57.4
TLX 150-3	3.6	160	148	209	8.3	105	4.13	254	10	10.9	24.0
TLX 150-4	4.2	160	148	276	10.9	105	4.13	254	10	14.5	32.0
TLX 150-5	6.0	160	148	342	13.5	105	4.13	254	10	18.0	39.7
TLX 150-6	7.2	160	148	409	16.1	105	4.13	254	10	21.5	47.4
TLX 150-7	8.4	160	148	476	18.8	105	4.13	254	10	24.9	54.9
TLX 180-3	3.6	195	180	250	9.9	105	4.13	254	10	12.6	27.8
TLX 180-4	4.8	195	180	331	13.0	105	4.13	254	10	16.7	36.8
TLX 180-5	6.0	195	180	411	16.2	105	4.13	254	10	20.8	45.9
TLX 180-6	7.2	195	180	492	19.4	105	4.13	254	10	24.8	54.7

\* According to IEC 60623

\*\* Obtained after a constant voltage charge of 1.45 V/cell for 24 h at + 25°C (+ 77°F) and available charge current of 0.15 C<sub>8</sub> A, followed by a discharge of 8 h at + 25°C (+ 77°F) down to 1.1 V/cell.



## Recycling: Saft's commitment to the environment

Saft is committed to the highest standards of environmental stewardship, minimising the impact of its products and operations by:

- prioritising use of recycled over un-recycled raw materials,
- reducing environmental plant releases, leading to lower water usage,
- implementing recycling solutions for customers' batteries at the end of their lives.

In most EU countries and North America, Saft partners companies who collect and recycle industrial Ni-Cd batteries, which are recycled free of charge to our customers in fully approved facilities. This service is managed in compliance with the Laws governing trans-boundary waste shipments.

A list of our collection points is available at [www.saftbatteries.com](http://www.saftbatteries.com)

In other countries, Saft assists customers in finding environmentally sound recycling solutions. Please contact your sales representative for further information.

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