

FERAK Nickel-Cadmium batteries
For a wide application range



FERAK

FERAK Ni-Cd batteries

Performance when you need it

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Saft Ferak a. s. has more than 50 years' experience in the design, development, manufacture and support of pocket plate cells and batteries. Today's high quality Ferak Ni-Cd batteries are installed in a broad range of rail and general industrial applications where reliability and life cycle cost-efficiency are important.



Total reliability without compromise

Outstanding performance

Ferak Ni-Cd batteries are designed and built to offer exceptional reliability with the benefit of total peace of mind and lower operating costs over a long service life. Additionally, they

- operate over a wide range of temperatures, from -50°C to $+70^{\circ}\text{C}$
- perform well at low temperature
- resist high temperature aging
- resist electrical abuse
- resist shock and vibration
- require only simple maintenance
- are easy and inexpensive to install

Low life cycle cost

Ferak Ni-Cd's high quality construction, large electrolyte reserve, low maintenance, long service intervals and advanced plate technology add up to 20 years' reliable service at a significantly lower cost than lead acid.



Designed to endure

Ferak single cell ranges are built to withstand the demands of industry, featuring

- fully welded internal construction of steel components
- strong, heat-welded polypropylene containers assembled into plywood crates as standard
- flip-top flame arresting vents as standard
- optional automated centralised water filling system providing safe, accurate and reliable replenishment
- full compliance with the ČSN EN 60623 (IEC 60623)

Meeting international standards

Saft Ferak a. s. ensure that at all stages of the battery's life, high international standards are maintained to provide quality products without harming the environment.

- quality approved manufacture to ISO 9001
- full recycling service to protect the environment
- environmental management system in accordance with ISO 14001

Exceptional choice for every application

Saft Ferak's single cell portfolio comprises high, medium and low rate discharge types.

KPH Range

Using very thin plates, the high rate range is designed for applications demanding relatively high currents over short periods, of usually less than 30 minutes' duration. The KPH range is normally specified for

- combustion engine starting and diesel-electric units
- powering diesel and electric locomotive on-board applications
- supplying the electrical system on trams, for lighting, electromagnetic brakes and door opening duties
- electrical systems where short, extremely high current consumption is necessary

KPM Range

The KPM range will sustain electrical loads for between 30 minutes to 3 hours, or for "mixed" loads which involve a combination of high and low discharge rates. The applications can have frequent or infrequent discharges and may include

- platform cars
- brake systems
- lighting of railway carriages and locomotives
- other power backup applications

KPL Range

The low rate range is designed to provide a reliable source of energy over longer discharge periods. Normally, the current is relatively low in comparison with the total stored energy and the discharges are generally infrequent. The KPL range is ideal for

- signalling equipment
- stationary and portable lighting equipment
- telecommunications
- emergency lighting for buildings



Construction features

Terminal seal

This is mechanically clipped and provides an excellent seal. This minimizes carbonation deposits.

Flame arresting vent

Plate group bus

Connects the plate tabs with the terminal post. Plate tabs and terminal posts are projection welded to the plate group bus.

Cell container

Material: translucent polypropylene.

Plate

Horizontal pockets of double-perforated steel strips.

Plate tab

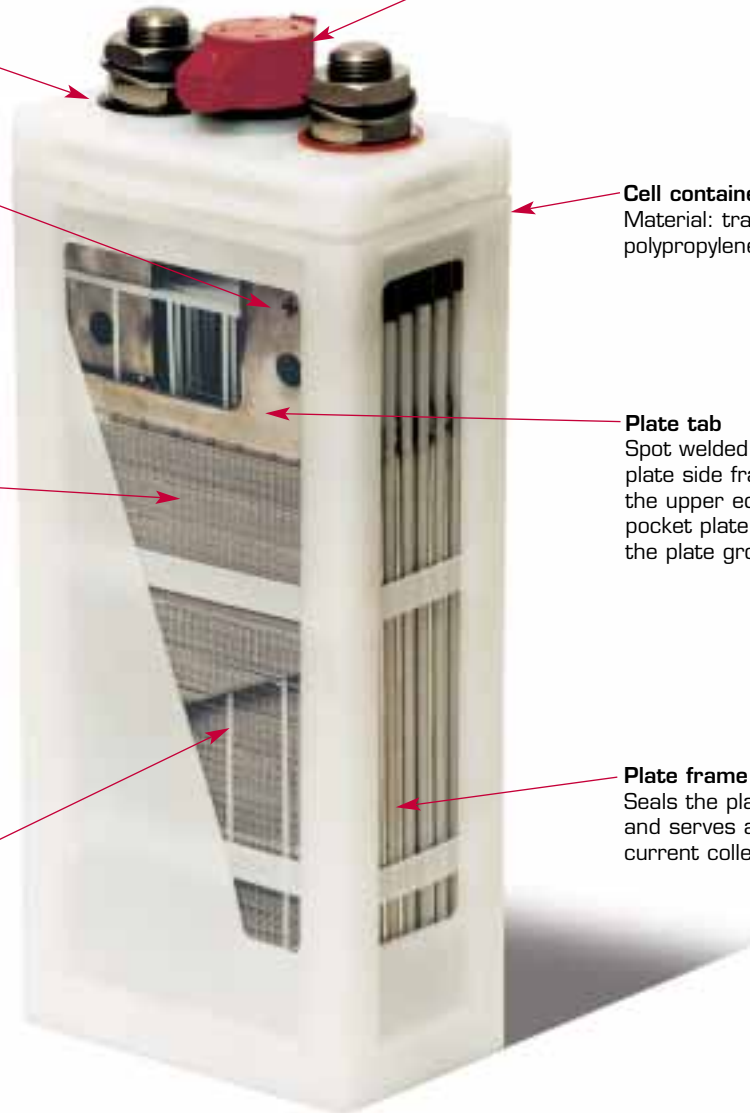
Spot welded to the plate side frames, to the upper edge of the pocket plate and to the plate group bus.

Separating grids

These separate the plates and insulate the plate frames from each other. The grids allow free circulation of electrolyte between the plates.

Plate frame

Seals the plate pockets and serves as a current collector.



KP cells fulfil all requirements specified by ČSN EN 60623 (IEC 60623)

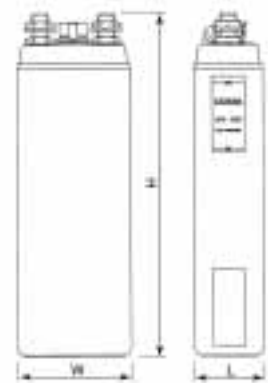
Designed and built to last

Ferak Ni-Cd delivers optimum performance without compromising structural integrity. The risk of sudden death cannot occur. Active materials are contained in pockets formed from double-perforated steel strips. These are mechanically linked, cut to size, compressed to final plate dimensions and welded to the current-carrying bus bar.

H Range

Cell capacities and dimensions

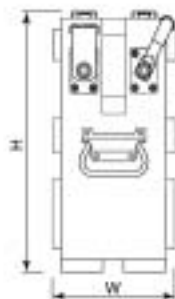
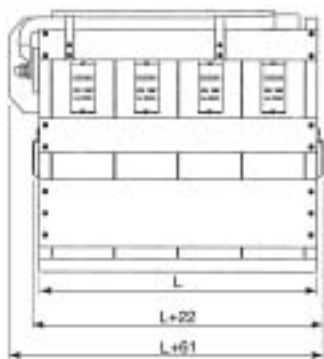
Cell type	Capacity (C ₅ Ah)	Dimensions (mm)			Cell connection bolt per pole	Electrolyte reserve (ml)	Weight (kg)
		W	L	H			
KPH 14 P	14	87	46	287	M10	100	1.9
KPH 18 P	18	87	46	287	M10	95	2.0
KPH 22 P	22	87	46	287	M10	95	2.2
KPH 26 P	26	87	86	287	M10	215	3.3
KPH 34 P	34	87	86	287	M10	205	3.5
KPH 38 P	38	87	86	287	M10	195	3.7
KPH 46 P	46	87	86	287	M10	190	4.0
KPH 50 P	50	87	86	287	M10	185	4.1
KPH 65 P	65	136	69	362	M20	460	5.7
KPH 80 P	80	136	69	362	M20	450	5.9
KPH 100 P	100	136	83	362	M20	555	6.7
KPH 125 P	125	164	104	362	2 x M20	880	10.9
KPH 150 P	150	164	104	362	2 x M20	875	11.2
KPH 170 P	170	165	128	362	2 x M20	1075	14.4
KPH 190 P	190	165	128	362	2 x M20	1055	14.9
KPH 210 P	210	165	128	362	2 x M20	1030	15.4
KPH 245 P	245	165	156	362	2 x M20	1295	18.0
KPH 255 P	255	165	156	362	2 x M20	1285	18.2
KPH 265 P	265	165	156	362	2 x M20	1270	18.5



H Range

Battery crate dimensions

Cell type	Weight including crate (kg)										H	W	Dimensions of plywood crate (mm)									
	2 cells	3 cells	4 cells	5 cells	6 cells	7 cells	8 cells	9 cells	10 cells	L												
KPH 14 P			9	11	13	15	18	20	22	302	113			220	268	315	363	410	458	505		
KPH 18 P			9	12	14	16	18	21	23	302	113			220	268	315	363	410	458	505		
KPH 22 P			10	13	15	17	20	22	25	302	113			220	268	315	363	410	458	505		
KPH 26 P		12	15	19	22	26	30			302	113		293	380	468	555	643	730				
KPH 34 P		12	16	20	23	27	31			302	113		293	380	468	555	643	730				
KPH 38 P		13	17	21	25	29	33			302	113		293	380	468	555	643	730				
KPH 46 P		14	18	22	26	31	35			302	113		293	380	468	555	643	730				
KPH 50 P		14	18	23	27	31	36			302	113		293	380	468	555	643	730				
KPH 65 P	15	21	28	34	41	47				385	168	177	248	318	389	459	530					
KPH 80 P	16	22	29	35	42	48				385	168	177	248	318	389	459	530					
KPH 100 P	17	25	32	39	47	54				385	168	205	290	374	459	543	628					
KPH 125 P	26	38	50	62	74					385	196	245	350	454	559	663						
KPH 150 P	27	39	51	64	76					385	196	245	350	454	559	663						
KPH 170 P	34	49	64	79						385	197	295	425	554	684							
KPH 190 P	35	51	66	82						385	197	295	425	554	684							
KPH 210 P	36	52	68	84						385	197	295	425	554	684							
KPH 245 P	41	60	79							385	197	351	509	666								
KPH 255 P	42	61	80							385	197	351	509	666								
KPH 265 P	46	62	81							385	197	351	509	666								



Crate length excluding handles = L
 Crate length including handles = L + 22mm
 Crate length including handles and front terminals = L + 61mm

Batteries are generally supplied in standard polypropylene plastic containers assembled into plywood crates. Crates can be equipped with front terminals if necessary. Optionally, for specialised needs, batteries can be supplied in flame retardant or stainless containers, assembled in mechanical formats to suit particular requirements.

H Range

Cell performance data

Performance for fully charged cells by a constant current charge according to ČSN EN 60623 standard

Available amperes at + 20°C ± 5°C

Final voltage: 1.14 V/cell

Cell type	Capacity (C ₅ Ah)	Hours				Minutes								Seconds			
		8 h	5 h	3 h	2 h	90 min	60 min	30 min	20 min	15 min	10 min	5 min	1 min	30 s	15 s	5 s	1 s
KPH 14 P	14	1.64	2.69	4.25	5.95	7.37	9.66	14.3	17.6	19.6	22.7	26.9	43.4	49.0	54.6	61.6	70.0
KPH 18 P	18	2.11	3.46	5.46	7.65	9.48	12.4	18.4	22.7	25.2	29.2	34.6	55.8	63.0	70.2	79.2	90.0
KPH 22 P	22	2.57	4.22	6.67	9.35	11.6	15.2	22.4	27.7	30.8	35.6	42.2	68.2	77.0	85.8	96.8	110
KPH 26 P	26	3.04	4.99	7.89	11.1	13.7	17.9	26.5	32.8	36.4	42.1	49.9	80.6	91.0	101	114	130
KPH 34 P	34	3.98	6.53	10.3	14.5	17.9	23.5	34.7	42.8	47.6	55.1	65.3	105	119	133	150	170
KPH 38 P	38	4.45	7.30	11.5	16.2	20.0	26.2	38.8	47.9	53.2	61.6	73.0	118	133	148	167	190
KPH 46 P	46	5.38	8.83	14.0	19.6	24.2	31.7	46.9	58.0	64.4	74.5	88.3	143	161	179	202	230
KPH 50 P	50	5.85	9.60	15.2	21.3	26.3	34.5	51.0	63.0	70.0	81.0	96.0	155	175	195	220	250
KPH 65 P	65	7.61	12.6	20.4	28.9	36.4	49.4	75.4	91.7	101	117	148	228	260	286	312	345
KPH 80 P	80	9.36	15.5	25.1	35.6	44.8	60.8	92.8	113	125	144	182	280	320	352	384	424
KPH 100 P	100	11.7	19.4	31.3	44.5	56.0	76.0	116	141	156	180	228	350	400	440	480	530
KPH 125 P	125	14.6	24.5	38.3	54.4	67.5	88.8	133	161	180	210	240	400	463	488	550	663
KPH 150 P	150	17.6	29.4	46.0	65.3	81.0	107	159	194	216	252	288	480	555	585	660	795
KPH 170 P	170	19.9	33.3	52.1	74.0	91.8	121	180	219	245	286	326	544	629	663	748	901
KPH 190 P	190	22.2	37.2	58.3	82.7	103	135	201	245	274	319	365	608	703	741	836	1007
KPH 210 P	210	24.6	41.2	64.4	91.4	113	149	223	271	302	353	403	672	777	819	924	1113
KPH 245 P	245	28.7	48.0	75.1	107	132	174	260	316	353	412	470	784	907	956	1078	1299
KPH 255 P	255	29.8	50.0	78.2	111	138	181	270	329	367	428	490	816	944	995	1122	1352
KPH 265 P	265	31.0	51.9	81.3	115	143	188	281	342	382	445	509	848	981	1034	1166	1405

Available amperes at + 20°C ± 5°C

Final voltage: 1.10 V/cell

Cell type	Capacity (C ₅ Ah)	Hours				Minutes								Seconds			
		8 h	5 h	3 h	2 h	90 min	60 min	30 min	20 min	15 min	10 min	5 min	1 min	30 s	15 s	5 s	1 s
KPH 14 P	14	1.69	2.74	4.39	6.30	8.03	11.2	17.4	21.0	23.0	26.9	31.9	51.8	57.4	63.0	72.8	82.6
KPH 18 P	18	2.18	3.53	5.64	8.10	10.3	14.4	22.3	27.0	29.5	34.6	41.0	66.6	73.8	81.0	93.6	106
KPH 22 P	22	2.66	4.31	6.89	9.90	12.6	17.6	27.3	33.0	36.1	42.2	50.2	81.4	90.2	99.0	114	130
KPH 26 P	26	3.15	5.10	8.15	11.7	14.9	20.8	32.2	39.0	42.6	49.9	59.3	96.2	107	117	135	153
KPH 34 P	34	4.11	6.66	10.7	15.3	19.5	27.2	42.2	51.0	55.8	65.3	77.5	126	139	153	177	201
KPH 38 P	38	4.60	7.45	11.9	17.1	21.8	30.4	47.1	57.0	62.3	73.0	86.6	141	156	171	198	224
KPH 46 P	46	5.57	9.02	14.4	20.7	26.4	36.8	57.0	69.0	75.4	88.3	105	170	189	207	239	271
KPH 50 P	50	6.05	9.80	15.7	22.5	28.7	40.0	62.0	75.0	82.0	96.0	114	185	205	225	260	295
KPH 65 P	65	7.87	12.6	20.8	29.9	39.0	55.9	88.4	109	125	144	172	273	299	332	364	403
KPH 80 P	80	9.68	15.5	25.6	36.8	48.0	68.8	109	134	154	178	211	336	368	408	448	496
KPH 100 P	100	12.1	19.4	32.0	46.0	60.0	86.0	136	168	192	222	264	420	460	510	560	620
KPH 125 P	125	15.1	24.8	39.6	57.5	73.3	103	160	191	215	248	300	463	525	575	650	763
KPH 150 P	150	18.2	29.7	47.5	69.0	88.0	123	192	230	258	297	360	555	630	690	780	915
KPH 170 P	170	20.6	33.7	53.8	78.2	99.7	139	218	260	292	337	408	629	714	782	884	1037
KPH 190 P	190	23.0	37.6	60.2	87.4	111	156	243	291	327	376	456	703	798	874	988	1159
KPH 210 P	210	25.4	41.6	66.5	96.6	123	172	269	321	361	416	504	777	882	966	1092	1281
KPH 245 P	245	29.6	48.5	77.6	113	144	201	314	375	421	485	588	907	1029	1127	1274	1495
KPH 255 P	255	30.9	50.5	80.8	117	150	209	326	390	439	505	612	944	1071	1173	1326	1556
KPH 265 P	265	32.1	52.5	83.9	122	155	217	339	405	456	525	636	981	1113	1219	1378	1617

H Range

Cell performance data

Performance for fully charged cells by a constant current charge according to ČSN EN 60623 standard

Available amperes at + 20°C ± 5°C

Final voltage: 1.05 V/cell

Cell type	Capacity (C _g Ah)	Hours				Minutes								Seconds			
		8 h	5 h	3 h	2 h	90 min	60 min	30 min	20 min	15 min	10 min	5 min	1 min	30 s	15 s	5 s	1 s
KPH 14 P	14	1.74	2.77	4.43	6.37	8.31	11.9	19.6	24.8	28.6	32.8	40.3	61.6	68.6	75.6	85.4	99.4
KPH 18 P	18	2.23	3.56	5.70	8.19	10.7	15.3	25.2	31.9	36.7	42.1	51.8	79.2	88.2	97.2	110	128
KPH 22 P	22	2.73	4.36	6.97	10.0	13.1	18.7	30.8	38.9	44.9	51.5	63.4	96.8	108	119	134	156
KPH 26 P	26	3.22	5.15	8.23	11.8	15.4	22.1	36.4	46.0	53.0	60.8	74.9	114	127	140	159	185
KPH 34 P	34	4.22	6.73	10.8	15.5	20.2	28.9	47.6	60.2	69.4	79.6	97.9	150	167	184	207	241
KPH 38 P	38	4.71	7.52	12.0	17.3	22.5	32.3	53.2	67.3	77.5	88.9	109	167	186	205	232	270
KPH 46 P	46	5.70	9.11	14.6	20.9	27.3	39.1	64.4	81.4	93.8	108	132	202	225	248	281	327
KPH 50 P	50	6.20	9.90	15.8	22.8	29.7	42.5	70.0	88.5	102	117	144	220	245	270	305	355
KPH 65 P	65	8.06	12.9	20.8	30.6	39.9	57.9	103	133	153	176	218	319	358	384	429	481
KPH 80 P	80	9.92	15.8	25.6	37.6	49.1	71.2	126	163	189	216	269	392	440	472	528	592
KPH 100 P	100	12.4	19.8	32.0	47.0	61.3	89.0	158	204	236	270	336	490	550	590	660	740
KPH 125 P	125	15.5	24.8	40.0	58.1	75.0	109	185	236	270	315	390	563	625	675	763	875
KPH 150 P	150	18.6	29.7	48.0	69.8	90.0	131	222	284	324	378	468	675	750	810	915	1050
KPH 170 P	170	21.1	33.7	54.4	79.1	102	148	252	321	367	428	530	765	850	918	1037	1190
KPH 190 P	190	23.6	37.6	60.8	88.4	114	165	281	359	410	479	593	855	950	1026	1159	1330
KPH 210 P	210	26.0	41.6	67.2	97.7	126	183	311	397	454	529	655	945	1050	1134	1281	1470
KPH 245 P	245	30.4	48.5	78.4	114	147	213	363	463	529	617	764	1103	1225	1323	1495	1715
KPH 255 P	255	31.6	50.5	81.6	119	153	222	377	482	551	643	796	1148	1275	1377	1556	1785
KPH 265 P	265	32.9	52.5	84.8	123	159	231	392	501	572	668	827	1193	1325	1431	1617	1855

Available amperes at + 20°C ± 5°C

Final voltage: 1.00 V/cell

Cell type	Capacity (C _g Ah)	Hours				Minutes								Seconds			
		8 h	5 h	3 h	2 h	90 min	60 min	30 min	20 min	15 min	10 min	5 min	1 min	30 s	15 s	5 s	1 s
KPH 14 P	14	1.75	2.80	4.48	6.44	8.31	12.0	21.3	28.1	32.5	38.6	48.7	70.0	78.4	86.8	98.0	115
KPH 18 P	18	2.25	3.60	5.76	8.28	10.7	15.5	27.4	36.2	41.8	49.7	62.6	90.0	101	112	126	148
KPH 22 P	22	2.75	4.40	7.04	10.1	13.1	18.9	33.4	44.2	51.0	60.7	76.6	110	123	136	154	180
KPH 26 P	26	3.25	5.20	8.32	12.0	15.4	22.4	39.5	52.3	60.3	71.8	90.5	130	146	161	182	213
KPH 34 P	34	4.25	6.80	10.9	15.6	20.2	29.2	51.7	68.3	78.9	93.8	118	170	190	211	238	279
KPH 38 P	38	4.75	7.60	12.2	17.5	22.5	32.7	57.8	76.4	88.2	105	132	190	213	236	266	312
KPH 46 P	46	5.75	9.20	14.7	21.2	27.3	39.6	69.9	92.5	107	127	160	230	258	285	322	377
KPH 50 P	50	6.25	10.0	16.0	23.0	29.7	43.0	76.0	101	116	138	174	250	280	310	350	410
KPH 65 P	65	8.13	13.0	21.0	30.6	39.9	58.5	111	148	174	207	250	371	410	449	494	553
KPH 80 P	80	10.0	16.0	25.9	37.6	49.1	72.0	136	182	214	254	307	456	504	552	608	680
KPH 100 P	100	12.5	20.0	32.3	47.0	61.3	90.0	170	228	268	318	384	570	630	690	760	850
KPH 125 P	125	15.6	25.0	40.4	58.8	75.8	110	200	266	310	368	480	650	713	788	888	1000
KPH 150 P	150	18.8	30.0	48.5	70.5	91.0	132	240	320	372	441	576	780	855	945	1065	1200
KPH 170 P	170	21.3	34.0	55.0	79.9	103	150	272	362	422	500	653	884	969	1071	1207	1360
KPH 190 P	190	23.8	38.0	61.4	89.3	115	167	304	405	471	559	730	988	1083	1197	1349	1520
KPH 210 P	210	26.3	42.0	67.9	98.7	127	185	336	447	521	617	806	1092	1197	1323	1491	1680
KPH 245 P	245	30.6	49.0	79.2	115	149	216	392	522	608	720	941	1274	1397	1544	1740	1960
KPH 255 P	255	31.9	51.0	82.5	120	155	224	408	543	632	750	979	1326	1454	1607	1811	2040
KPH 265 P	265	33.1	53.0	85.7	125	161	233	424	564	657	779	1018	1378	1511	1670	1882	2120

H Range

Cell performance data

Performance for fully charged cells by a constant current charge according to ČSN EN 60623 standard

Available amperes at + 20°C ± 5°C

Final voltage: 0.85 V/cell

Cell type	Capacity (C ₅ Ah)	Seconds					
		90 s	60 s	30 s	15 s	5 s	1 s
KPH 14 P	14	95.2	104	112	123	137	154
KPH 18 P	18	122	133	144	158	176	198
KPH 22 P	22	150	163	176	194	216	242
KPH 26 P	26	177	192	208	229	255	286
KPH 34 P	34	231	252	272	299	333	374
KPH 38 P	38	258	281	304	334	372	418
KPH 46 P	46	313	340	368	405	451	506
KPH 50 P	50	340	370	400	440	490	550
KPH 65 P	65	494	520	572	611	676	767
KPH 80 P	80	608	640	704	752	832	944
KPH 100 P	100	760	800	880	940	1040	1180
KPH 125 P	125	850	925	1000	1100	1225	1375
KPH 150 P	150	1020	1110	1200	1320	1470	1650
KPH 170 P	170	1156	1258	1360	1496	1666	1870
KPH 190 P	190	1292	1406	1520	1672	1862	2090
KPH 210 P	210	1428	1554	1680	1848	2058	2310
KPH 245 P	245	1666	1813	1960	2156	2401	2695
KPH 255 P	255	1734	1887	2040	2244	2499	2805
KPH 265 P	265	1802	1961	2120	2332	2597	2915

Available amperes at + 20°C ± 5°C

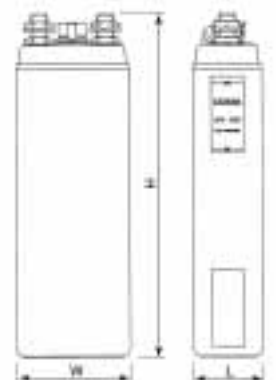
Final voltage: 0.65 V/cell

Cell type	Capacity (C ₅ Ah)	Seconds					
		90 s	60 s	30 s	15 s	5 s	1 s
KPH 14 P	14	134	143	154	171	190	210
KPH 18 P	18	173	184	198	220	245	270
KPH 22 P	22	211	224	242	268	299	330
KPH 26 P	26	250	265	286	317	354	390
KPH 34 P	34	326	347	374	415	462	510
KPH 38 P	38	365	388	418	464	517	570
KPH 46 P	46	442	469	506	561	626	690
KPH 50 P	50	480	510	550	610	680	750
KPH 65 P	65	689	728	780	845	936	1053
KPH 80 P	80	848	896	960	1040	1152	1296
KPH 100 P	100	1060	1120	1200	1300	1440	1620
KPH 125 P	125	1200	1275	1375	1525	1700	1875
KPH 150 P	150	1440	1530	1650	1830	2040	2250
KPH 170 P	170	1632	1734	1870	2074	2312	2550
KPH 190 P	190	1824	1938	2090	2318	2584	2850
KPH 210 P	210	2016	2142	2310	2562	2856	3150
KPH 245 P	245	2352	2499	2695	2989	3332	3675
KPH 255 P	255	2448	2601	2805	3111	3468	3825
KPH 265 P	265	2544	2703	2915	3233	3604	3975

M Range

Cell capacities and dimensions

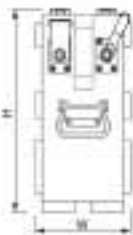
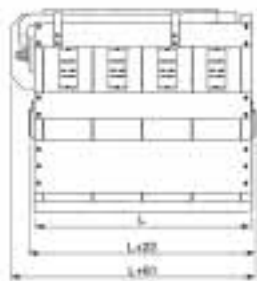
Cell type	Capacity (C ₅ Ah)	Dimensions (mm)			Cell connection bolt per pole	Electrolyte reserve (ml)	Weight (kg)
		W	L	H			
KPM 11 P	11	87	46	287	M10	115	1.7
KPM 18 P	18	87	46	287	M10	110	1.9
KPM 25 P	25	87	46	287	M10	105	2.0
KPM 32 P	32	87	86	287	M10	230	3.0
KPM 38 P	38	87	86	287	M10	225	3.2
KPM 45 P	45	87	86	287	M10	215	3.4
KPM 50 P	50	87	86	287	M10	210	3.6
KPM 60 P	60	87	86	287	M10	205	3.7
KPM 80 P	80	136	83	328	M20	405	5.8
KPM 95 P	95	136	83	328	M20	400	6.0
KPM 105 P	105	136	83	328	M20	395	6.2
KPM 120 P	120	136	93	312	M20	440	6.7
KPM 140 P	140	136	112	328	M20	555	8.1
KPM 160 P	160	136	112	328	M20	550	8.3
KPM 180 P	180	192	93	365	M20	715	10.6
KPM 210 P	210	192	93	365	M20	705	10.9
KPM 230 P	230	192	93	365	M20	700	11.3
KPM 250 P	250	192	93	365	M20	690	11.6
KPM 280 P	280	198	130	365	M20	970	14.5
KPM 300 P	300	198	130	365	M20	960	14.8
KPM 340 P	340	198	130	365	M20	955	15.1
KPM 375 P	375	198	130	365	M20	950	15.4



M Range

Battery crate dimensions

Cell type	Weight including crate (kg)									H	W	Dimensions of plywood crate (mm)									
	2 cells	3 cells	4 cells	5 cells	6 cells	7 cells	8 cells	9 cells	10 cells			2 cells	3 cells	4 cells	5 cells	6 cells	7 cells	8 cells	9 cells	10 cells	
KPM 11 P			8.2	10.1	11.9	13.8	15.7	17.5	19.4	302	113			220	268	315	363	410	458	505	
KPM 18 P			9.0	11.1	13.1	15.2	17.3	19.3	21.4	302	113			220	268	315	363	410	458	505	
KPM 25 P			9.4	11.6	13.7	15.9	18.1	20.2	22.4	302	113			220	268	315	363	410	458	505	
KPM 32 P		10.7	13.9	17.1	20.4	23.7	27.0			302	113		293	380	468	555	643	730			
KPM 38 P		11.3	14.7	18.1	21.6	25.1	28.6			302	113		293	380	468	555	643	730			
KPM 45 P		11.9	15.5	19.1	22.8	26.5	30.2			302	113		293	380	468	555	643	730			
KPM 50 P		12.5	16.3	20.1	24.0	27.9	31.8			302	113		293	380	468	555	643	730			
KPM 60 P		12.8	16.7	20.6	24.6	28.6	32.6			302	113		293	380	468	555	643	730			
KPM 80 P	15	22	28	34	42	48				351	168	205	290	374	459	543	628				
KPM 95 P	16	22	29	35	43	49				351	168	205	290	374	459	543	628				
KPM 105 P	16	23	30	36	44	51				351	168	205	290	374	459	543	628				
KPM 120 P	17	25	32	39	47					335	168	225	320	414	509	603					
KPM 140 P	20	29	38	47	56					351	168	263	377	490	604	717					
KPM 160 P	21	30	39	48	57					351	168	263	377	490	604	717					
KPM 180 P	27	39	50	62	75					388	224	225	320	414	509	603					
KPM 210 P	27	40	52	64	77					388	224	225	320	414	509	603					
KPM 230 P	28	40	53	65	78					388	224	225	320	414	509	603					
KPM 250 P	29	41	54	67	80					388	224	225	320	414	509	603					
KPM 280 P	34	49	65							388	230	299	431	562							
KPM 300 P	35	50	66							388	230	299	431	562							
KPM 340 P	35	51	67							388	230	299	431	562							
KPM 375 P	36	52	68							388	230	299	431	562							



Crate length excluding handles = L
 Crate length including handles = L + 22mm
 Crate length including handles and front terminals = L + 61mm

Batteries are generally supplied in standard polypropylene plastic containers assembled into plywood crates. Crates can be equipped with front terminals if necessary. Optionally, for specialised needs, batteries can be supplied in flame retardant or stainless containers, assembled in mechanical formats to suit particular requirements.

M Range – Cell performance data

Performance for fully charged cells by a constant current charge according to ČSN EN 60623 standard

Available amperes at + 20°C ± 5°C

Final voltage: 1.14 V/cell

Cell type	Capacity (C ₅ Ah)	Hours					Minutes									Seconds			
		10 h	8 h	5 h	3 h	2 h	90 min	60 min	30 min	20 min	15 min	10 min	5 min	1 min	30 s	15 s	5 s	1 s	
KPM 11P	11	1.06	1.32	2.07	3.23	4.40	5.35	6.71	9.02	10.6	11.9	13.9	17.2	26.4	29.7	31.9	37.4	46.2	
KPM 18 P	18	1.74	2.16	3.38	5.28	7.20	8.76	11.0	14.8	17.3	19.4	22.7	28.1	43.2	48.6	52.2	61.2	75.6	
KPM 25 P	25	2.42	3.00	4.70	7.33	10.0	12.2	15.3	20.5	24.0	27.0	31.5	39.0	60.0	67.5	72.5	85.0	105	
KPM 32 P	32	3.09	3.84	6.02	9.39	12.8	15.6	19.5	26.2	30.7	34.6	40.3	49.9	76.8	86.4	92.8	109	134	
KPM 38 P	38	3.67	4.56	7.14	11.1	15.2	18.5	23.2	31.2	36.5	41.0	47.9	59.3	91.2	103	110	129	160	
KPM 45 P	45	4.35	5.40	8.46	13.2	18.0	21.9	27.5	36.9	43.2	48.6	56.7	70.2	108	122	131	153	189	
KPM 50 P	50	4.84	6.00	9.40	14.7	20.0	24.3	30.5	41.0	48.0	54.0	63.0	78.0	120	135	145	170	210	
KPM 60 P	60	5.80	7.20	11.3	17.6	24.0	29.2	36.6	49.2	57.6	64.8	75.6	93.6	144	162	174	204	252	
KPM 80 P	80	7.74	9.60	15.2	22.9	30.8	36.8	46.4	62.4	72.0	80.0	96.0	115	176	192	216	248	280	
KPM 95 P	95	9.19	11.4	18.1	27.2	36.6	43.7	55.1	74.1	85.5	95.0	114	137	209	228	257	295	333	
KPM 105 P	105	10.2	12.6	20.0	30.1	40.4	48.3	60.9	81.9	94.5	105	126	151	231	252	284	326	368	
KPM 120 P	120	11.6	14.4	22.8	34.4	46.2	55.2	69.6	93.6	108	120	144	173	264	288	324	372	420	
KPM 140 P	140	13.5	16.8	26.6	40.1	53.9	64.4	81.2	109	126	140	168	202	308	336	378	434	490	
KPM 160 P	160	15.5	19.2	30.4	45.9	61.6	73.6	92.8	125	144	160	192	230	352	384	432	496	560	
KPM 180 P	180	17.4	21.6	31.7	45.6	57.6	67.2	79.2	108	124	130	151	173	234	261	279	315	324	
KPM 210 P	210	20.3	25.2	37.0	53.2	67.2	78.4	92.4	126	145	151	176	202	273	305	326	368	378	
KPM 230 P	230	22.2	27.6	40.5	58.3	73.6	85.9	101	138	159	166	193	221	299	334	357	403	414	
KPM 250 P	250	24.2	30.0	44.0	63.3	80.0	93.3	110	150	173	180	210	240	325	363	388	438	450	
KPM 280 P	280	27.1	33.6	49.3	70.9	89.6	105	123	168	193	202	235	269	364	406	434	490	504	
KPM 300 P	300	29.0	36.0	52.8	76.0	96.0	112	132	180	207	216	252	288	390	435	465	525	540	
KPM 340 P	340	32.9	40.8	59.8	86.1	109	127	150	204	235	245	286	326	442	493	527	595	612	
KPM 375 P	375	36.3	45.0	66.0	95.0	120	140	165	225	259	270	315	360	488	544	581	656	675	

Available amperes at + 20°C ± 5°C

Final voltage: 1.10 V/cell

Cell type	Capacity (C ₅ Ah)	Hours					Minutes									Seconds			
		10 h	8 h	5 h	3 h	2 h	90 min	60 min	30 min	20 min	15 min	10 min	5 min	1 min	30 s	15 s	5 s	1 s	
KPM 11P	11	1.09	1.35	2.13	3.41	4.84	6.01	7.81	11.4	13.5	15.0	17.2	19.8	30.8	34.1	37.4	44.0	52.8	
KPM 18 P	18	1.78	2.21	3.49	5.58	7.92	9.84	12.8	18.7	22.1	24.5	28.1	32.4	50.4	55.8	61.2	72.0	86.4	
KPM 25 P	25	2.48	3.08	4.85	7.75	11.0	13.7	17.8	26.0	30.8	34.0	39.0	45.0	70.0	77.5	85.0	100	120	
KPM 32 P	32	3.17	3.94	6.21	9.92	14.1	17.5	22.7	33.3	39.4	43.5	49.9	57.6	89.6	99.2	109	128	154	
KPM 38 P	38	3.77	4.67	7.37	11.8	16.7	20.8	27.0	39.5	46.7	51.7	59.3	68.4	106	118	129	152	182	
KPM 45 P	45	4.46	5.54	8.73	14.0	19.8	24.6	32.0	46.8	55.4	61.2	70.2	81.0	126	140	153	180	216	
KPM 50 P	50	4.96	6.15	9.70	15.5	22.0	27.3	35.5	52.0	61.5	68.0	78.0	90.0	140	155	170	200	240	
KPM 60 P	60	5.95	7.38	11.6	18.6	26.4	32.8	42.6	62.4	73.8	81.6	93.6	108	168	186	204	240	288	
KPM 80 P	80	7.93	9.84	15.7	24.8	35.2	43.2	54.4	76.8	93.6	102	120	144	200	224	248	288	328	
KPM 95 P	95	9.41	11.7	18.6	29.5	41.8	51.3	64.6	91.2	111	122	143	171	238	266	295	342	390	
KPM 105 P	105	10.4	12.9	20.6	32.6	46.2	56.7	71.4	101	123	134	158	189	263	294	326	378	431	
KPM 120 P	120	11.9	14.8	23.5	37.2	52.8	64.8	81.6	115	140	154	180	216	300	336	372	432	492	
KPM 140 P	140	13.9	17.2	27.4	43.4	61.6	75.6	95.2	134	164	179	210	252	350	392	434	504	574	
KPM 160 P	160	15.9	19.7	31.4	49.6	70.4	86.4	109	154	187	205	240	288	400	448	496	576	656	
KPM 180 P	180	17.8	22.1	34.2	51.6	68.4	81.6	101	130	146	158	173	216	279	306	324	360	378	
KPM 210 P	210	20.8	25.8	39.9	60.2	79.8	95.2	118	151	170	185	202	252	326	357	378	420	441	
KPM 230 P	230	22.8	28.3	43.7	65.9	87.4	104	129	166	186	202	221	276	357	391	414	460	483	
KPM 250 P	250	24.8	30.8	47.5	71.7	95.0	113	140	180	203	220	240	300	388	425	450	500	525	
KPM 280 P	280	27.7	34.4	53.2	80.3	106	127	157	202	227	246	269	336	434	476	504	560	588	
KPM 300 P	300	29.7	36.9	57.0	86.0	114	136	168	216	243	264	288	360	465	510	540	600	630	
KPM 340 P	340	33.7	41.8	64.6	97.5	129	154	190	245	275	299	326	408	527	578	612	680	714	
KPM 375 P	375	37.2	46.1	71.3	108	143	170	210	270	304	330	360	450	581	638	675	750	788	

M Range – Cell performance data

Performance for fully charged cells by a constant current charge according to ČSN EN 60623 standard

Available amperes at + 20°C ± 5°C

Final voltage: 1.05 V/cell

Cell type	Capacity (C ₅ Ah)	Hours					Minutes									Seconds			
		10 h	8 h	5 h	3 h	2 h	90 min	60 min	30 min	20 min	15 min	10 min	5 min	1 min	30 s	15 s	5 s	1 s	
KPM 11P	11	1.11	1.38	2.18	3.52	5.06	6.38	8.80	13.0	16.2	18.0	20.5	25.1	36.3	40.7	44.0	51.7	62.7	
KPM 18 P	18	1.81	2.25	3.56	5.76	8.28	10.4	14.4	22.0	26.5	29.5	33.5	41.0	59.4	66.6	72.0	84.6	103	
KPM 25 P	25	2.52	3.13	4.95	8.00	11.5	14.5	20.0	31.0	36.8	41.0	46.5	57.0	82.5	92.5	100	118	143	
KPM 32 P	32	3.22	4.00	6.34	10.2	14.7	18.6	25.6	39.0	47.0	52.5	59.5	73.0	106	118	128	150	182	
KPM 38 P	38	3.83	4.75	7.52	12.2	17.5	22.0	30.4	46.0	55.9	62.3	70.7	86.6	125	141	152	179	217	
KPM 45 P	45	4.53	5.63	8.91	14.4	20.7	26.1	36.0	55.0	66.2	73.8	83.7	103	149	167	180	212	257	
KPM 50 P	50	5.04	6.25	9.90	16.0	23.0	29.0	40.0	61.0	73.5	82.0	93.0	114	165	185	200	235	285	
KPM 60 P	60	6.04	7.50	11.9	19.2	27.6	34.8	48.0	73.0	88.2	98.4	112	137	198	222	240	282	342	
KPM 80 P	80	8.06	10.0	15.8	25.6	36.8	46.4	63.2	94.0	113	125	139	163	240	264	296	336	384	
KPM 95 P	95	9.57	11.9	18.8	30.4	43.7	55.1	75.1	112	134	148	165	194	285	314	352	399	456	
KPM 105 P	105	10.6	13.1	20.8	33.6	48.3	60.9	83.0	124	148	164	183	214	315	347	389	441	504	
KPM 120 P	120	12.1	15.0	23.8	38.4	55.2	69.6	94.8	142	169	187	209	245	360	396	444	504	576	
KPM 140 P	140	14.1	17.5	27.7	44.8	64.4	81.2	111	165	197	218	244	286	420	462	518	588	672	
KPM 160 P	160	16.1	20.0	31.7	51.2	73.6	92.8	126	189	226	250	278	326	480	528	592	672	768	
KPM 180 P	180	18.1	22.5	35.3	56.4	79.2	96.0	117	151	178	202	227	281	324	360	378	423	450	
KPM 210 P	210	21.1	26.3	41.2	65.8	92.4	112	137	176	208	235	265	328	378	420	441	494	525	
KPM 230 P	230	23.2	28.8	45.1	72.1	101	123	150	193	228	258	290	359	414	460	483	541	575	
KPM 250 P	250	25.2	31.3	49.0	78.3	110	133	163	210	248	280	315	390	450	500	525	588	625	
KPM 280 P	280	28.2	35.0	54.9	87.7	123	149	182	235	277	314	353	437	504	560	588	658	700	
KPM 300 P	300	30.2	37.5	58.8	94.0	132	160	195	252	297	336	378	468	540	600	630	705	750	
KPM 340 P	340	34.2	42.5	66.6	107	150	181	221	286	337	381	428	530	612	680	714	799	850	
KPM 375 P	375	37.8	46.9	73.5	118	165	200	244	315	371	420	473	585	675	750	788	881	938	

Available amperes at + 20°C ± 5°C

Final voltage: 1.00 V/cell

Cell type	Capacity (C ₅ Ah)	Hours					Minutes									Seconds			
		10 h	8 h	5 h	3 h	2 h	90 min	60 min	30 min	20 min	15 min	10 min	5 min	1 min	30 s	15 s	5 s	1 s	
KPM 11P	11	1.12	1.39	2.20	3.56	5.12	6.60	9.13	14.7	18.5	21.1	24.4	29.0	44.0	46.2	50.6	59.4	72.6	
KPM 18 P	18	1.83	2.27	3.60	5.82	8.37	10.8	14.9	24.1	30.2	34.6	40.0	47.5	72.0	75.6	82.8	97.2	119	
KPM 25 P	25	2.54	3.15	5.00	8.08	11.6	15.0	20.8	33.5	42.0	48.0	55.5	66.0	100	105	115	135	165	
KPM 32 P	32	3.25	4.03	6.40	10.3	14.9	19.2	26.6	42.9	53.8	61.4	71.0	84.5	128	134	147	173	211	
KPM 38 P	38	3.86	4.79	7.60	12.3	17.7	22.8	31.5	50.9	63.8	73.0	84.4	100	152	160	175	205	251	
KPM 45 P	45	4.57	5.67	9.00	14.6	20.9	27.0	37.4	60.3	75.6	86.4	99.9	119	180	189	207	243	297	
KPM 50 P	50	5.08	6.30	10.0	16.2	23.3	30.0	41.5	67.0	84.0	96.0	111	132	200	210	230	270	330	
KPM 60 P	60	6.09	7.56	12.0	19.4	27.9	36.0	49.8	80.4	101	115	133	158	240	252	276	324	396	
KPM 80 P	80	8.12	10.1	16.0	25.6	36.8	48.0	67.2	106	127	141	163	192	280	312	336	392	448	
KPM 95 P	95	9.64	12.0	19.0	30.4	43.7	57.0	79.8	125	151	167	194	228	333	371	399	466	532	
KPM 105 P	105	10.7	13.2	21.0	33.6	48.3	63.0	88.2	139	167	185	214	252	368	410	441	515	588	
KPM 120 P	120	12.2	15.1	24.0	38.4	55.2	72.0	101	158	191	211	245	288	420	468	504	588	672	
KPM 140 P	140	14.2	17.6	28.0	44.8	64.4	84.0	118	185	223	246	286	336	490	546	588	686	784	
KPM 160 P	160	16.2	20.2	32.0	51.2	73.6	96.0	134	211	254	282	326	384	560	624	672	784	896	
KPM 180 P	180	18.3	22.7	36.0	58.2	82.8	102	131	187	221	245	281	324	378	414	441	486	531	
KPM 210 P	210	21.3	26.5	42.0	67.9	96.6	119	153	218	258	286	328	378	441	483	515	567	620	
KPM 230 P	230	23.3	29.0	46.0	74.4	106	130	168	239	283	313	359	414	483	529	564	621	679	
KPM 250 P	250	25.4	31.5	50.0	80.8	115	142	183	260	308	340	390	450	525	575	613	675	738	
KPM 280 P	280	28.4	35.3	56.0	90.5	129	159	204	291	344	381	437	504	588	644	686	756	826	
KPM 300 P	300	30.5	37.8	60.0	97.0	138	170	219	312	369	408	468	540	630	690	735	810	885	
KPM 340 P	340	34.5	42.8	68.0	110	156	193	248	354	418	462	530	612	714	782	833	918	1003	
KPM 375 P	375	38.1	47.3	75.0	121	173	213	274	390	461	510	585	675	788	863	919	1013	1106	

L Range – Cell performance data

Performance for fully charged cells by a constant current charge according to ČSN EN 60623 standard

Available amperes at + 20°C ± 5°C

Final voltage: 1.14 V/cell

Cell type	Capacity (C ₅ Ah)	Hours					Minutes		
		10 h	8 h	5 h	3 h	2 h	90 min	60 min	30 min
KPL 10 P	10	0.97	1.15	1.60	2.20	2.70	3.07	3.60	4.40
KPL 20 P	20	1.94	2.30	3.20	4.40	5.40	6.13	7.20	8.80
KPL 30 P	30	3.00	3.64	5.40	7.50	9.15	10.2	12.0	14.4
KPL 40 P	40	4.00	4.85	7.20	10.0	12.2	13.6	16.0	19.2
KPL 55 P	55	5.61	6.81	10.1	14.1	17.6	19.8	23.1	29.7
KPL 70 P	70	7.14	8.66	12.9	18.0	22.4	25.2	29.4	37.8

Available amperes at + 20°C ± 5°C

Final voltage: 1.10 V/cell

Cell type	Capacity (C ₅ Ah)	Hours					Minutes		
		10 h	8 h	5 h	3 h	2 h	90 min	60 min	30 min
KPL 10 P	10	1.04	1.26	1.82	2.57	3.15	3.60	4.20	5.60
KPL 20 P	20	2.08	2.53	3.64	5.13	6.30	7.20	8.40	11.2
KPL 30 P	30	3.12	3.83	5.70	8.20	10.4	12.0	14.7	19.2
KPL 40 P	40	4.16	5.10	7.60	10.9	13.8	16.0	19.	25.6
KPL 55 P	55	5.72	7.01	10.6	15.6	20.4	24.2	29.7	38.5
KPL 70 P	70	7.28	8.93	13.4	19.8	25.9	30.8	37.8	49.0

L Range – Cell performance data

Performance for fully charged cells by a constant current charge according to ČSN EN 60623 standard

Available amperes at + 20°C ± 5°C

Final voltage: 1.05 V/cell

Cell type	Capacity (C ₅ Ah)	Hours					Minutes		
		10 h	8 h	5 h	3 h	2 h	90 min	60 min	30 min
KPL 10 P	10	1.09	1.33	1.92	2.80	3.60	4.27	5.20	7.00
KPL 20 P	20	2.18	2.65	3.84	5.60	7.20	8.53	10.4	14.0
KPL 30 P	30	3.18	3.90	5.82	8.90	12.0	14.4	18.0	22.8
KPL 40 P	40	4.24	5.20	7.76	11.9	16.0	19.2	24.0	30.4
KPL 55 P	55	5.83	7.15	10.8	17.2	24.2	29.0	35.2	44.0
KPL 70 P	70	7.42	9.10	13.7	21.9	30.8	36.9	44.8	56.0

Available amperes at + 20°C ± 5°C

Final voltage: 1.00 V/cell

Cell type	Capacity (C ₅ Ah)	Hours					Minutes		
		10 h	8 h	5 h	3 h	2 h	90 min	60 min	30 min
KPL 10 P	10	1.13	1.36	2.00	3.03	4.05	4.87	6.10	8.20
KPL 20 P	20	2.26	2.73	4.00	6.07	8.10	9.73	12.2	16.4
KPL 30 P	30	3.27	3.94	6.00	9.50	13.2	16.0	19.8	25.8
KPL 40 P	40	4.36	5.25	8.00	12.7	17.6	21.3	26.4	34.4
KPL 55 P	55	5.83	7.22	11.0	17.8	25.3	30.8	38.5	50.6
KPL 70 P	70	7.42	9.19	14.0	22.6	32.2	39.2	49.0	64.4

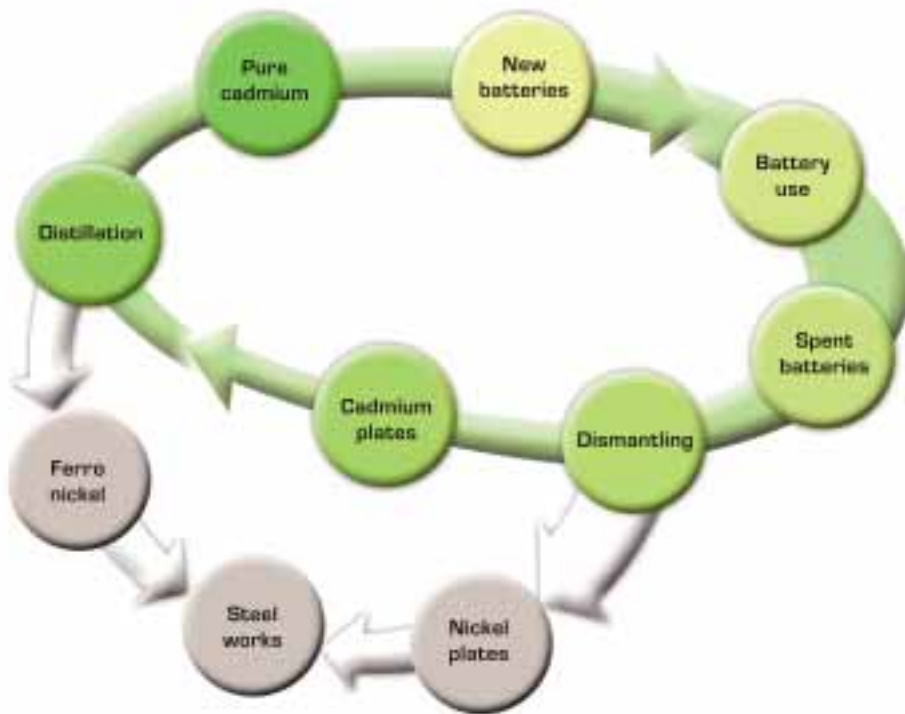
Disposal and recycling

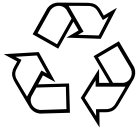
In a world where autonomous sources of electric power are ever more in demand, Ferak batteries provide an environmentally responsible answer to these needs. Environmental management lies at the core of Saft Ferak's business and we take care to control every stage of a battery's life cycle in terms of potential impact. Environmental protection is our top priority, from design and production through end-of-life collection, disposal and recycling, where more than 99% of battery metals are recycled.

Our respect for the environment is complemented by an equal respect for our customers. We aim to generate confidence in our products, not only from a functional standpoint, but also in terms of the environmental safeguards that are built into their life cycle. The simple and unique nature of the battery components make them readily recyclable and this process safeguards valuable natural resources for future generations.

In partnership with collection agencies worldwide, Saft Ferak organizes retrieval from pre-collection points and the recycling of spent Ferak batteries.

Ni-Cd batteries must not be discarded as harmless waste and should be treated carefully in accordance with local and national regulations. Your Saft representative can assist with further information on these regulations and with the overall recycling procedure.





Committed to a clean environment.

Saft Ferak a. s. takes seriously its responsibility to safeguard the environment. At several sites worldwide, more than 99% of metals contained in the battery are recycled. This process safeguards valuable natural resources and is a service to customers that Saft Ferak a. s. will continue to offer for future generations.

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