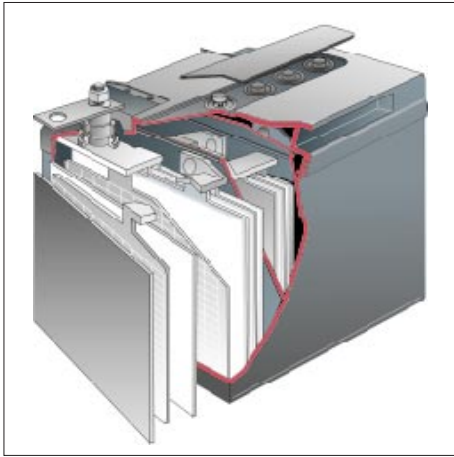


Valve regulated batteries
for stationary applications

HAGEN *HDP*



HAGEN HDP



HDP is a new range of high power VRLA batteries using AGM technology.

The range is designed to meet the requirements of rapid and ultrarapid discharges. It is particularly suitable for UPS applications and bears an expected lifetime of 5 to 8 years depending on operation conditions.

The built in security valve fitted in the cover protects the battery against over pressure that could be generated by a failing charging system. It also prevents air from entering the battery.

High pressure tested pole sealing provides for an absolutely tight and corrosion - free pole bushing.



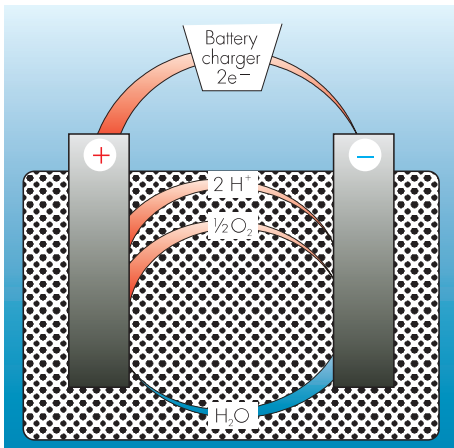
Applications

- UPS systems
- Industrial UPS
- Signalling equipments
- Alarm systems
- Offshore industry

Advantages

- High volumetric energy density
- High rate current resistant
- Maintenance free, sealed
- Corrosion protected connexion system
- High performance flat grid plates
- Transport without danger of acid leakage
- Service life in float operation of 5 to 8 years
- Reduced ventilation
- Low self discharge allowing long storage
- Optional: fully flame retardant design

Recombination and how it works !



In lead batteries with a liquid electrolyte, water is decomposed into the hydrogen and oxygen gas during charging, especially at its end. These gases escape through the battery cell plugs and have to be replaced by adding water.

In our valve regulated lead acid storage battery, the electrolyte is absorbed in microscopic glass-fibre mats, the pore volume of which is filled up to 90%.

With a suitable design of the positive and negative plate capacities, oxygen evolves first at the positive plate during charging. This oxygen can flow through the free

pores directly to the negative plate, where it combines with the stream of H⁺ ions of the electrolyte and electrons out of the electrode to form water again.

By this procedure the development of hydrogen is almost completely suppressed.

The water reaches the positive electrode by means of diffusion. The cycle of decomposition and recombination is closed. Due to the very low loss of water a refilling of the battery during the life time is not necessary.

Principle of recombination

Charging Method and Charging Voltage

Only regulated charges should be used to charge the batteries. The constant charging voltage is 2.27 to 2.30 V/cell at a temperature of 20 °C.

A charging voltage which follows the temperature increases the expected life of the battery (see figure 1).

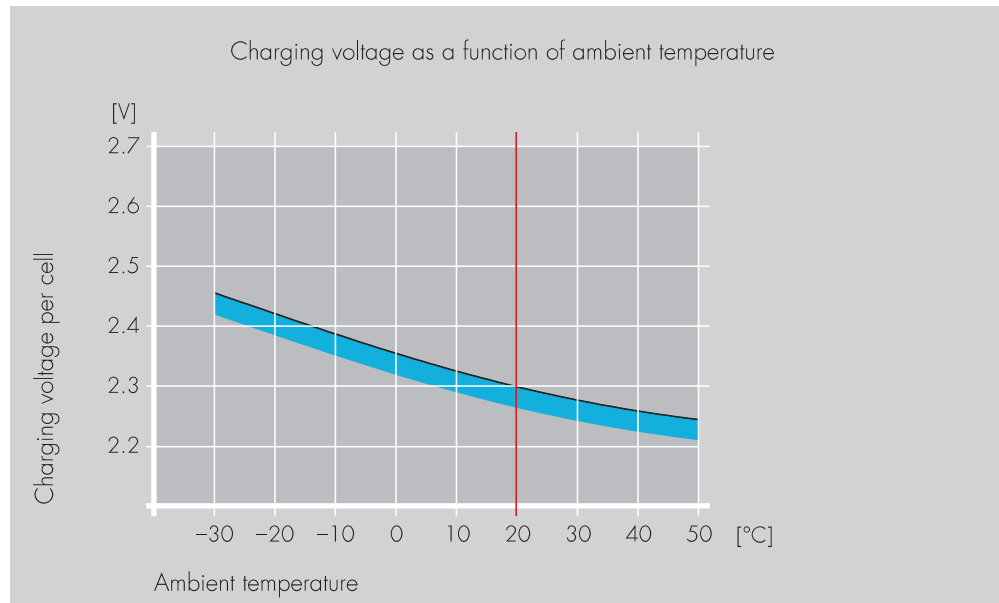


Figure 1

Shelf life

HAGEN HDP batteries are delivered „filled and charged“. They should be stored in dry rooms at a maximum temperature of 20 °C. Figure 2 shows the relationship between shelf life and self-discharge at various ambient temperatures.

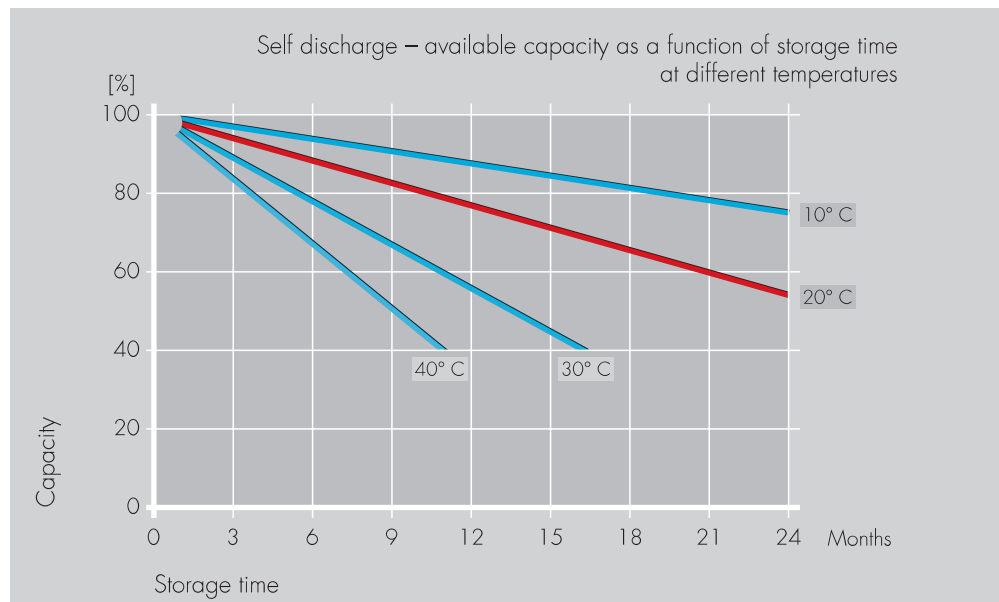


Figure 2

Battery life

The expected life of HAGEN HDP batteries depends mainly on the ambient temperature (see figure 3) and the capacity turnover.

In parallel standby operation, particular attention should be paid to the charging voltage as shown in figure 1.

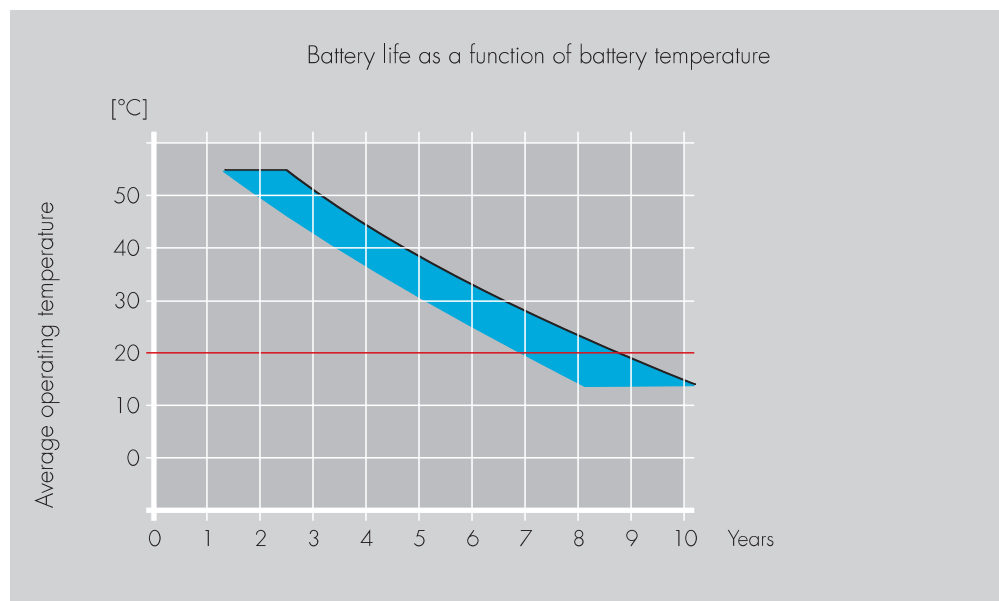


Figure 3

Projecting Data

Constant performance in Watt/cell

Us = 1.85 V/Z									
Typ	3'	5'	10'	15'	20'	30'	45'	1h	
HDP 1270	48.8	40.0	27.3	20.6	17.0	12.5	8.8	7.1	
HDP 6100	65.3	54.3	38.3	29.6	24.6	18.5	13.8	10.9	
HDP 12280	158.3	135.4	97.9	76.7	62.9	46.7	34.0	27.1	
HDP 12300	169.7	142.7	103.0	80.7	66.7	49.3	36.3	29.5	
HDP 12500	236.7	201.2	148.8	118.0	98.2	76.0	57.8	46.7	
HDP 12600	328.0	280.3	207.2	163.5	134.8	100.2	73.3	59.5	
HDP 12800	445.7	375.3	270.5	212.2	175.2	129.8	94.7	76.3	
HDP 121050	604.3	506.7	365.3	287.8	237.3	175.0	126.7	104.3	
HDP 61700	748.3	681.7	545.7	448.0	379.0	288.3	209.7	165.3	
HDP 61950	852.7	780.0	634.3	520.0	440.3	339.7	260.0	211.3	

Us = 1.80 V/Z									
Typ	3'	5'	10'	15'	20'	30'	45'	1h	
HDP 1270	52.5	42.5	29.1	22.3	18.1	13.1	9.2	7.5	
HDP 6100	73.0	60.0	42.0	33.0	26.1	19.8	14.5	11.4	
HDP 12280	180.0	151.7	107.5	83.3	67.9	49.7	35.8	28.3	
HDP 12300	192.3	159.5	113.2	87.5	71.5	52.7	38.7	31.7	
HDP 12500	277.2	232.8	166.3	129.0	106.8	80.8	61.2	49.5	
HDP 12600	366.7	313.0	227.7	177.8	145.8	106.5	78.2	63.3	
HDP 12800	502.8	419.5	296.7	230.0	188.3	138.2	100.7	81.3	
HDP 121050	685.2	565.7	400.7	311.5	255.8	186.8	134.7	110.3	
HDP 61700	905.7	808.0	622.0	500.0	414.7	307.3	220.3	173.7	
HDP 61950	1012.3	922.0	717.7	582.3	485.3	367.3	274.0	222.7	

Us = 1.75 V/Z									
Typ	3'	5'	10'	15'	20'	30'	45'	1h	
HDP 1270	55.3	45.0	30.8	23.3	18.8	13.5	9.5	7.6	
HDP 6100	78.3	64.6	44.3	34.0	27.6	20.5	14.8	11.6	
HDP 12280	194.6	162.5	114.2	88.3	71.7	52.5	37.8	29.5	
HDP 12300	207.8	171.7	120.3	92.8	75.3	55.2	40.5	33.3	
HDP 12500	299.3	250.2	176.5	135.8	111.7	84.3	63.5	51.8	
HDP 12600	402.3	336.7	243.3	188.0	153.3	112.0	81.7	66.2	
HDP 12800	545.8	450.5	317.0	244.3	197.8	145.3	104.5	84.7	
HDP 121050	740.7	606.0	425.8	330.0	268.8	197.0	142.7	115.3	
HDP 61700	1039.0	912.7	681.7	538.7	438.7	321.7	228.7	178.7	
HDP 61950	1140.7	1015.7	783.3	624.0	513.0	381.3	282.7	227.7	

Us = 1.70 V/Z									
Typ	3'	5'	10'	15'	20'	30'	45'	1h	
HDP 1270	56.8	46.1	31.1	23.6	19.0	13.6	9.6	7.8	
HDP 6100	82.6	66.3	46.0	34.6	28.1	20.8	15.0	11.9	
HDP 12280	208.3	171.7	118.8	90.4	73.3	53.3	38.3	30.0	
HDP 12300	221.3	180.8	125.2	95.2	77.2	56.3	41.3	33.7	
HDP 12500	319.8	263.7	182.2	138.5	114.0	86.3	65.5	53.8	
HDP 12600	427.5	355.8	251.3	193.3	157.3	115.0	83.3	67.5	
HDP 12800	584.0	475.5	328.8	250.3	203.8	149.0	106.2	85.5	
HDP 121050	787.8	639.7	442.7	338.3	275.5	200.3	145.5	117.8	
HDP 61700	1151.0	989.0	719.7	560.0	455.3	330.7	233.7	183.3	
HDP 61950	1244.7	1092.0	825.0	644.0	530.3	391.7	287.7	230.3	

Us = 1.65 V/Z									
Typ	3'	5'	10'	15'	20'	30'	45'	1h	
HDP 1270	57.8	46.8	31.5	23.8	19.1	13.8	9.8	7.8	
HDP 6100	84.6	68.0	46.6	35.3	28.5	21.0	15.1	11.9	
HDP 12280	221.3	179.2	121.7	92.1	74.2	54.2	38.8	30.4	
HDP 12300	233.5	189.0	128.2	97.2	78.3	57.0	42.0	34.0	
HDP 12500	339.7	275.5	186.2	141.0	116.0	87.7	66.5	54.7	
HDP 12600	450.3	370.3	258.3	197.3	159.7	116.7	84.3	68.5	
HDP 12800	612.5	495.7	337.2	255.0	207.3	151.3	107.3	86.3	
HDP 121050	829.8	666.7	452.7	345.2	278.8	203.7	147.2	118.8	
HDP 61700	1210.7	1034.3	739.0	572.0	464.7	336.0	238.0	186.0	
HDP 61950	1317.3	1144.0	846.0	658.7	537.3	396.3	289.7	231.7	

Us = 1.60 V/Z									
Typ	3'	5'	10'	15'	20'	30'	45'	1h	
HDP 1270	58.3	47.1	31.6	24.0	19.3	14.0	10.0	7.8	
HDP 6100	86.0	69.0	47.3	35.6	28.6	21.2	15.1	12.0	
HDP 12280	230.4	185.0	123.8	93.3	75.0	55.0	39.2	30.8	
HDP 12300	242.7	194.8	130.0	98.3	78.8	57.5	42.5	34.3	
HDP 12500	353.8	284.2	190.0	143.3	118.0	89.0	67.3	55.3	
HDP 12600	461.0	380.0	262.2	200.0	161.7	118.0	85.3	69.5	
HDP 12800	637.5	513.7	344.3	258.3	209.7	153.0	108.5	87.0	
HDP 121050	863.5	688.3	461.5	350.0	281.7	205.3	148.0	119.5	
HDP 61700	1237.0	1053.3	753.0	583.3	472.0	340.3	240.3	188.3	
HDP 61950	1355.3	1175.3	859.7	666.7	540.7	398.7	291.3	232.3	

Technical data

Dimensions and Weights

Type	U_N Volt	L	Dimensions (mm) W	H	Weight (kg)	Terminal
HDP 1270	12	151	66	98	2.7	Faston
HDP 6100	6	151	51	98	2	Faston
HDP 12280	12	168	177	126	10	M6
HDP 12300	12	168	127	174	10	M6
HDP 12500	12	198	168	175	15	M6
HDP 12600	12	234	169	190	20	M8
HDP 12800	12	272	166	190	24.5	M8
HDP 121050	12	359	172	226	33.5	M8
HDP 61700	6	272	166	190	25.5	M8
HDP 61950	6	359	171	226	33	M8

