

[www.midacbatteries.com](http://www.midacbatteries.com)



# MSP

## Vented Lead-Acid STANDBY POWER BATTERIES

**SPECIFICATION**

## ADVANTAGES

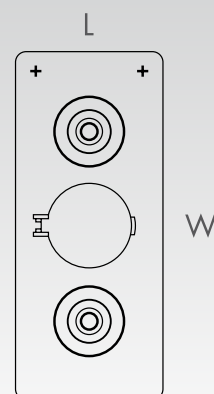
- √ Long life under cycling use
- √ Up to 1500 deep discharge cycles
- √ Extended topping-up intervals
- √ Maximum charging efficiency
- √ Minimal positive growth
- √ Improved safety against accidental contacts

## MAIN APPLICATIONS

- √ Renewable energy
- √ Energy storage
- √ Emergency power
- √ Railways
- √ Telecommunications

## STANDARD REF.

- √ EN 60896-11
- √ EN 61427
- √ EN 60254-1
- √ EN 60254-2
- √ EN 50272-2
- √ EN 50272-3



Type	Nominal Voltage V	Actual Capacity		Ri mOhm	Isc kA	Dimensions (mm)			Weight		Electrolyte		No. of Terminals
		Ah/10Hrs	Ah/120Hrs			Length	Width	Overall Height	Wet Kg	Dry Kg	Weight Kg	Volume Litres	
<b>2 MSP 55</b>	2	119	151	1,35	1,43	82,5	197,5	405	12,8	7,6	5,2	4,2	2
<b>3 MSP 55</b>	2	178	227	0,92	2,14	82,5	197,5	405	14,1	10,0	4,1	3,3	2
<b>4 MSP 55</b>	2	238	302	0,71	2,85	82,5	197,5	405	15,7	12,2	3,5	2,8	2
<b>5 MSP 55</b>	2	297	378	0,58	3,56	100,5	197,5	405	19,2	14,9	4,3	3,4	2
<b>4 MSP 70</b>	2	300	464	0,75	2,70	82,5	197,5	475	19,7	15,2	4,5	3,6	2
<b>5 MSP 70</b>	2	375	580	0,63	3,37	100,5	197,5	475	24,0	18,7	5,3	4,3	2
<b>6 MSP 70</b>	2	450	695	0,55	4,05	118,5	197,5	475	28,6	22,0	6,6	5,3	2
<b>7 MSP 70</b>	2	525	811	0,49	4,72	136,5	197,5	475	33,0	26,3	6,7	5,4	2

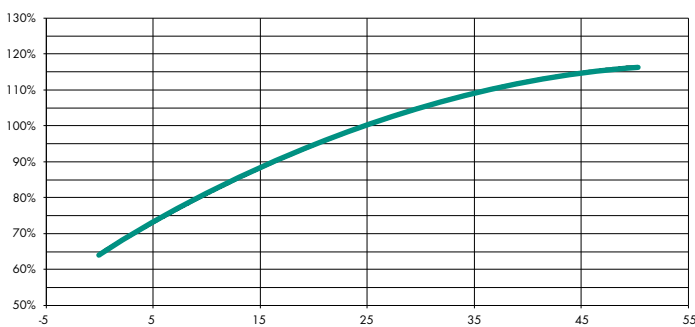
**SPECIFICATION**

√ Positive plates	Tubular plate with lead selenium grid alloy (Sb < 2%) and woven gauntlet
√ Negative plates	Flat pasted plate with lead selenium grid alloy (Sb < 2%)
√ Separators	Polyethylene separator sleeve on positive plate
√ Container	White translucent Polypropylene
√ Lid	Opaque dark-gray Polypropylene
√ Electrolyte	Dilute solution of sulphuric acid SG 1.260 ± 0.01 at 25°C
√ Electrolyte reserve	Maximum availability over the plates
√ Terminal Posts	d24 with M10 threaded insert
√ Posts sealing	Sealing bush on HQ post finishing
√ Vents	Flame arrestor ceramic vents fully tested in compliance with UL standard (option: Flip-top version)
√ Plates suspension	Bottom supported with sediment space
√ Inter-cell connectors	Fully insulated copper
√ Terminal hardware	Fully insulated steel

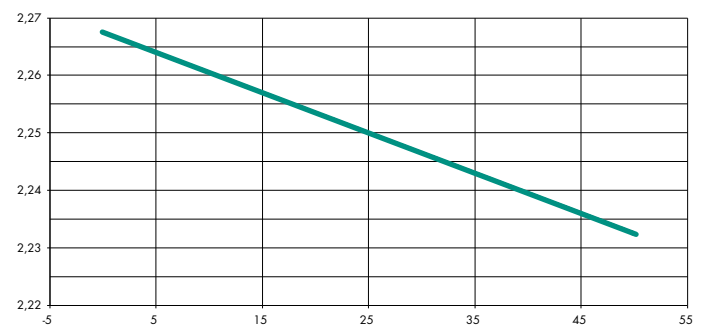
**OPERATION PARAMETERS**

√ Float Voltage (Vpc)	2.23 to 2.25 Vpc
√ Max Float Current (A)	0.15 C10
√ Boost Voltage (Vpc)	2.35 to 2.45 Vpc
√ Max Boost Current (A)	0.15 C10
√ Operating Temperature	-10°C to +50°C
√ Self Discharge	<4% /month at 20°C
√ Torque setting	18±1 Nm (bolts on connections)

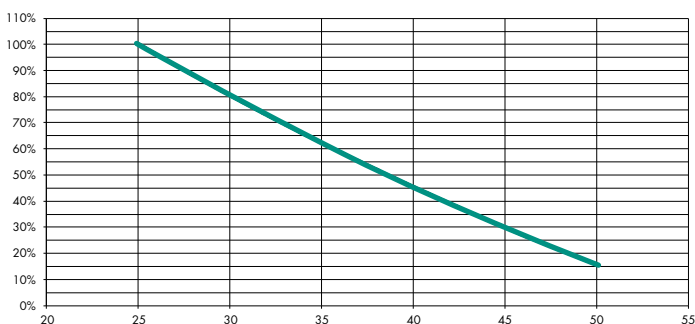
**PERFORMANCE** Capacity vs Temperature (°C)



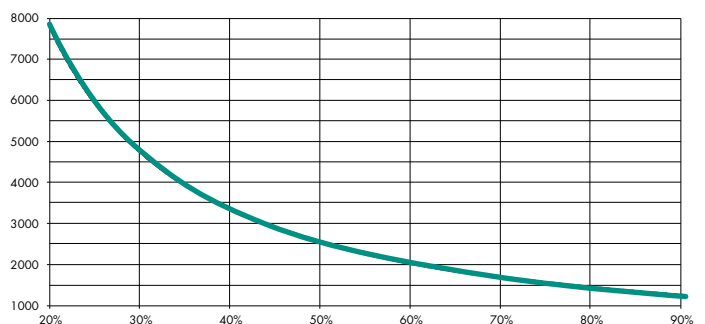
**TEMPERATURE COMPENSATION** Float Voltage vs Temperature (°C)



**THERMAL DEGRADATION** Lifetime vs Temperature (°C)



**LIFECYCLES** No. of Cycles vs D.o.D. (% C10)



## DISCHARGE CURRENT (A) to 1.60 V<sub>pc</sub> at 25°C

Type	Minutes				Hours									
	5	10	15	30	1	2	3	5	8	10	20	24	100	120
<b>2 MSP 55</b>	200,5	<b>165,6</b>	140,6	100,3	<b>66,5</b>	42,2	31,7	21,8	15,1	<b>12,6</b>	6,82	5,78	<b>1,56</b>	1,31
<b>3 MSP 55</b>	300,8	<b>248,4</b>	210,9	150,5	<b>99,7</b>	63,2	47,6	32,7	22,6	<b>18,8</b>	10,23	8,67	<b>2,33</b>	1,97
<b>4 MSP 55</b>	401,0	<b>331,2</b>	281,3	200,6	<b>132,9</b>	84,3	63,4	43,6	30,2	<b>25,1</b>	13,64	11,56	<b>3,11</b>	2,62
<b>5 MSP 55</b>	501,3	<b>414,0</b>	351,6	250,8	<b>166,1</b>	105,4	79,3	54,5	37,7	<b>31,4</b>	17,05	14,44	<b>3,89</b>	3,28
<b>4 MSP 70</b>	544,5	<b>445,0</b>	372,4	253,4	<b>164,8</b>	102,9	77,7	53,4	37,6	<b>31,5</b>	17,87	15,23	<b>4,70</b>	3,98
<b>5 MSP 70</b>	680,7	<b>556,2</b>	465,5	316,8	<b>206,0</b>	128,6	97,1	66,7	47,0	<b>39,4</b>	22,34	19,04	<b>5,87</b>	4,98
<b>6 MSP 70</b>	816,8	<b>667,5</b>	558,6	380,2	<b>247,2</b>	154,3	116,5	80,1	56,4	<b>47,3</b>	26,81	22,85	<b>7,04</b>	5,97
<b>7 MSP 70</b>	952,9	<b>778,7</b>	651,7	443,5	<b>288,4</b>	180,0	135,9	93,4	65,8	<b>55,2</b>	31,27	26,66	<b>8,22</b>	6,97

## DISCHARGE CURRENT (A) to 1.70 V<sub>pc</sub> at 25°C

Type	Minutes				Hours									
	5	10	15	30	1	2	3	5	8	10	20	24	100	120
<b>2 MSP 55</b>	145,6	<b>128,2</b>	114,6	87,0	<b>61,4</b>	40,9	30,9	21,3	14,8	<b>12,3</b>	6,72	5,70	<b>1,54</b>	1,30
<b>3 MSP 55</b>	218,4	<b>192,2</b>	172,0	130,5	<b>92,1</b>	61,3	46,3	32,0	22,1	<b>18,4</b>	10,07	8,55	<b>2,31</b>	1,94
<b>4 MSP 55</b>	291,2	<b>256,3</b>	229,3	174,0	<b>122,8</b>	81,7	61,7	42,6	29,5	<b>24,6</b>	13,43	11,39	<b>3,08</b>	2,59
<b>5 MSP 55</b>	364,1	<b>320,4</b>	286,6	217,5	<b>153,5</b>	102,2	77,2	53,3	36,9	<b>30,7</b>	16,79	14,24	<b>3,85</b>	3,24
<b>4 MSP 70</b>	357,6	<b>319,7</b>	284,3	211,6	<b>148,5</b>	96,6	73,8	51,4	36,4	<b>30,6</b>	17,39	14,87	<b>4,58</b>	3,88
<b>5 MSP 70</b>	447,0	<b>399,6</b>	355,4	264,5	<b>185,7</b>	120,8	92,2	64,3	45,5	<b>38,2</b>	21,73	18,59	<b>5,72</b>	4,85
<b>6 MSP 70</b>	536,4	<b>479,5</b>	426,4	317,3	<b>222,8</b>	144,9	110,7	77,2	54,6	<b>45,9</b>	26,08	22,31	<b>6,87</b>	5,82
<b>7 MSP 70</b>	625,8	<b>559,5</b>	497,5	370,2	<b>259,9</b>	169,1	129,1	90,0	63,7	<b>53,5</b>	30,43	26,03	<b>8,01</b>	6,79

## DISCHARGE CURRENT (A) to 1.80 V<sub>pc</sub> at 25°C

Type	Minutes				Hours									
	5	10	15	30	1	2	3	5	8	10	20	24	100	120
<b>2 MSP 55</b>	110,5	<b>101,8</b>	93,8	75,7	<b>55,8</b>	38,0	29,1	20,4	14,2	<b>11,9</b>	6,51	5,53	<b>1,49</b>	1,26
<b>3 MSP 55</b>	165,7	<b>152,8</b>	140,6	113,6	<b>83,7</b>	57,0	43,7	30,6	21,3	<b>17,8</b>	9,77	8,30	<b>2,24</b>	1,89
<b>4 MSP 55</b>	220,9	<b>203,7</b>	187,5	151,5	<b>111,6</b>	76,0	58,3	40,8	28,4	<b>23,8</b>	13,03	11,07	<b>2,99</b>	2,52
<b>5 MSP 55</b>	276,2	<b>254,6</b>	234,4	189,4	<b>139,5</b>	95,0	72,9	51,0	35,5	<b>29,7</b>	16,29	13,84	<b>3,74</b>	3,15
<b>4 MSP 70</b>	218,1	<b>202,7</b>	187,9	156,9	<b>122,3</b>	87,6	69,0	49,8	35,5	<b>30,0</b>	17,06	14,67	<b>4,56</b>	3,86
<b>5 MSP 70</b>	272,7	<b>253,4</b>	234,9	196,2	<b>152,9</b>	109,5	86,2	62,2	44,3	<b>37,5</b>	21,33	18,34	<b>5,70</b>	4,83
<b>6 MSP 70</b>	327,2	<b>304,0</b>	281,9	235,4	<b>183,4</b>	131,3	103,5	74,7	53,2	<b>45,0</b>	25,59	22,00	<b>6,83</b>	5,80
<b>7 MSP 70</b>	381,7	<b>354,7</b>	328,9	274,6	<b>214,0</b>	153,2	120,7	87,1	62,0	<b>52,5</b>	29,86	25,67	<b>7,97</b>	6,76

**DISCHARGE CURRENT (A) to 1.90 Vpc at 25°C**

Type	Minutes				Hours									
	5	10	15	30	1	2	3	5	8	10	20	24	100	120
<b>2 MSP 55</b>	68,0	<b>64,3</b>	60,9	52,5	<b>41,5</b>	29,9	23,5	17,0	12,1	<b>10,2</b>	5,72	4,87	<b>1,31</b>	1,10
<b>3 MSP 55</b>	102,0	<b>96,5</b>	91,3	78,8	<b>62,3</b>	44,8	35,2	25,5	18,2	<b>15,3</b>	8,57	7,31	<b>1,96</b>	1,65
<b>4 MSP 55</b>	136,0	<b>128,7</b>	121,7	105,1	<b>83,0</b>	59,8	47,0	33,9	24,2	<b>20,4</b>	11,43	9,74	<b>2,62</b>	2,20
<b>5 MSP 55</b>	170,1	<b>160,8</b>	152,1	131,4	<b>103,8</b>	74,7	58,7	42,4	30,3	<b>25,5</b>	14,29	12,18	<b>3,27</b>	2,76
<b>4 MSP 70</b>	144,8	<b>138,5</b>	130,9	112,4	<b>90,3</b>	66,9	54,7	41,3	30,5	<b>26,1</b>	15,50	13,40	<b>4,24</b>	3,60
<b>5 MSP 70</b>	181,0	<b>173,2</b>	163,7	140,5	<b>112,8</b>	83,6	68,4	51,6	38,2	<b>32,7</b>	19,37	16,75	<b>5,30</b>	4,50
<b>6 MSP 70</b>	217,2	<b>207,8</b>	196,4	168,7	<b>135,4</b>	100,3	82,1	61,9	45,8	<b>39,2</b>	23,25	20,10	<b>6,36</b>	5,40
<b>7 MSP 70</b>	253,4	<b>242,5</b>	229,1	196,8	<b>157,9</b>	117,0	95,8	72,2	53,4	<b>45,8</b>	27,12	23,45	<b>7,42</b>	6,30

## DISCHARGE POWER (W) to 1.60 V<sub>pc</sub> at 25°C

Type	Minutes				Hours								
	5	10	15	30	1	2	3	5	8	10	20	24	100
<b>2 MSP 55</b>	334,5	<b>281,1</b>	242,9	176,2	<b>118,7</b>	76,5	58,5	40,9	28,7	<b>24,3</b>	13,38	11,51	<b>3,15</b>
<b>3 MSP 55</b>	501,7	<b>421,6</b>	364,3	264,3	<b>178,0</b>	114,8	87,8	61,3	43,1	<b>36,4</b>	20,08	17,26	<b>4,72</b>
<b>4 MSP 55</b>	669,0	<b>562,2</b>	485,7	352,4	<b>237,4</b>	153,0	117,0	81,7	57,5	<b>48,5</b>	26,77	23,02	<b>6,29</b>
<b>5 MSP 55</b>	836,2	<b>702,7</b>	607,2	440,5	<b>296,7</b>	191,3	146,3	102,2	71,8	<b>60,7</b>	33,46	28,77	<b>7,86</b>
<b>4 MSP 70</b>	908,3	<b>755,4</b>	643,2	445,2	<b>294,4</b>	186,7	143,3	100,0	71,6	<b>61,0</b>	35,07	30,35	<b>9,49</b>
<b>5 MSP 70</b>	1135,4	<b>944,2</b>	804,0	556,5	<b>367,9</b>	233,4	179,1	125,0	89,5	<b>76,2</b>	43,84	37,93	<b>11,87</b>
<b>6 MSP 70</b>	1362,5	<b>1133,1</b>	964,8	667,7	<b>441,5</b>	280,1	214,9	150,1	107,4	<b>91,5</b>	52,60	45,52	<b>14,24</b>
<b>7 MSP 70</b>	1589,6	<b>1321,9</b>	1125,6	779,0	<b>515,1</b>	326,8	250,7	175,1	125,3	<b>106,7</b>	61,37	53,10	<b>16,61</b>

## DISCHARGE POWER (W) to 1.70 V<sub>pc</sub> at 25°C

Type	Minutes				Hours								
	5	10	15	30	1	2	3	5	8	10	20	24	100
<b>2 MSP 55</b>	257,1	<b>228,9</b>	207,1	159,0	<b>113,5</b>	76,4	58,3	40,7	28,5	<b>24,0</b>	13,24	11,35	<b>3,10</b>
<b>3 MSP 55</b>	385,7	<b>343,4</b>	310,7	238,5	<b>170,2</b>	114,5	87,5	61,1	42,7	<b>35,9</b>	19,86	17,02	<b>4,65</b>
<b>4 MSP 55</b>	514,2	<b>457,8</b>	414,3	318,0	<b>227,0</b>	152,7	116,6	81,4	57,0	<b>47,9</b>	26,48	22,70	<b>6,19</b>
<b>5 MSP 55</b>	642,8	<b>572,3</b>	517,8	397,5	<b>283,7</b>	190,9	145,8	101,8	71,2	<b>59,9</b>	33,10	28,37	<b>7,74</b>
<b>4 MSP 70</b>	631,4	<b>571,0</b>	513,7	386,6	<b>274,5</b>	180,5	139,4	98,2	70,3	<b>59,7</b>	34,28	29,63	<b>9,22</b>
<b>5 MSP 70</b>	789,3	<b>713,8</b>	642,1	483,3	<b>343,1</b>	225,7	174,3	122,8	87,8	<b>74,6</b>	42,85	37,04	<b>11,52</b>
<b>6 MSP 70</b>	947,1	<b>856,6</b>	770,5	579,9	<b>411,8</b>	270,8	209,1	147,4	105,4	<b>89,5</b>	51,42	44,45	<b>13,82</b>
<b>7 MSP 70</b>	1105,0	<b>999,3</b>	898,9	676,6	<b>480,4</b>	315,9	244,0	171,9	123,0	<b>104,5</b>	59,99	51,86	<b>16,13</b>

## DISCHARGE POWER (W) to 1.80 V<sub>pc</sub> at 25°C

Type	Minutes				Hours								
	5	10	15	30	1	2	3	5	8	10	20	24	100
<b>2 MSP 55</b>	202,0	<b>187,4</b>	173,8	141,3	<b>104,7</b>	71,8	55,4	39,0	27,5	<b>23,1</b>	12,72	10,87	<b>2,95</b>
<b>3 MSP 55</b>	303,0	<b>281,0</b>	260,8	211,9	<b>157,0</b>	107,7	83,0	58,4	41,2	<b>34,7</b>	19,08	16,31	<b>4,43</b>
<b>4 MSP 55</b>	403,9	<b>374,7</b>	347,7	282,6	<b>209,4</b>	143,5	110,7	77,9	54,9	<b>46,2</b>	25,44	21,74	<b>5,91</b>
<b>5 MSP 55</b>	504,9	<b>468,4</b>	434,6	353,2	<b>261,7</b>	179,4	138,4	97,4	68,7	<b>57,8</b>	31,80	27,18	<b>7,38</b>
<b>4 MSP 70</b>	398,8	<b>372,9</b>	348,4	292,7	<b>229,5</b>	165,3	131,0	95,1	68,6	<b>58,3</b>	33,32	28,81	<b>9,00</b>
<b>5 MSP 70</b>	498,5	<b>466,1</b>	435,6	365,9	<b>286,9</b>	206,6	163,8	118,9	85,7	<b>72,9</b>	41,65	36,01	<b>11,25</b>
<b>6 MSP 70</b>	598,2	<b>559,3</b>	522,7	439,1	<b>344,3</b>	248,0	196,5	142,7	102,9	<b>87,5</b>	49,98	43,22	<b>13,50</b>
<b>7 MSP 70</b>	697,9	<b>652,6</b>	609,8	512,3	<b>401,6</b>	289,3	229,3	166,4	120,0	<b>102,1</b>	58,31	50,42	<b>15,75</b>

**DISCHARGE POWER (W) to 1.90 Vpc at 25°C**

Type	Minutes				Hours								
	5	10	15	30	1	2	3	5	8	10	20	24	100
<b>2 MSP 55</b>	131,9	<b>124,8</b>	118,2	102,2	<b>80,8</b>	58,2	45,8	33,1	23,7	<b>19,9</b>	11,20	9,55	<b>2,57</b>
<b>3 MSP 55</b>	197,8	<b>187,3</b>	177,4	153,3	<b>121,2</b>	87,3	68,7	49,7	35,5	<b>29,9</b>	16,80	14,33	<b>3,86</b>
<b>4 MSP 55</b>	263,8	<b>249,7</b>	236,5	204,4	<b>161,6</b>	116,5	91,6	66,3	47,4	<b>39,9</b>	22,40	19,10	<b>5,14</b>
<b>5 MSP 55</b>	329,7	<b>312,1</b>	295,6	255,5	<b>202,0</b>	145,6	114,5	82,9	59,2	<b>49,8</b>	28,00	23,88	<b>6,43</b>
<b>4 MSP 70</b>	280,7	<b>268,9</b>	254,4	218,7	<b>175,7</b>	130,3	106,8	80,6	59,7	<b>51,2</b>	30,36	26,28	<b>8,33</b>
<b>5 MSP 70</b>	350,9	<b>336,1</b>	318,0	273,3	<b>219,6</b>	162,9	133,5	100,8	74,6	<b>64,0</b>	37,95	32,85	<b>10,41</b>
<b>6 MSP 70</b>	421,1	<b>403,3</b>	381,5	328,0	<b>263,6</b>	195,5	160,2	120,9	89,6	<b>76,8</b>	45,54	39,42	<b>12,49</b>
<b>7 MSP 70</b>	491,3	<b>470,6</b>	445,1	382,7	<b>307,5</b>	228,1	186,9	141,1	104,5	<b>89,5</b>	53,13	46,00	<b>14,58</b>



#### **MIDAC S.p.A.**

VIA A.VOLTA, 2 - Z.I. - 37038 SOAVE (VERONA) - ITALIA  
TEL. +39 045 61 32 1 32 - FAX +39 045 61 32 1 33  
E-mail: midac@midacbatteries.com

#### **MIDAC DEUTSCHLAND GMBH**

BERSRÖDER STRASSE 23 - 35447  
REISKIRCHEN - DEUTSCHLAND  
TEL. +49 6408 5036390 - FAX +49 6408 50363915  
E-MAIL: VERTRIEB@MIDACBATTERIES.COM

#### **MIDAC NEDERLAND BV**

KEPLERLAAN 10 - 6716BS EDE - NEDERLAND  
TEL. +31 318 678230 - FAX +31 318 678231  
E-mail: verkoop@midacbatteries.com

#### **MIDAC AUSTRALIA**

2/32 BLUETT DRIVE - SMEATON GRANGE, NSW - 2567  
TEL. +61 02 4647 1422 - FAX +61 02 4648 1684  
E-mail: midac.australia@midacbatteries.com

#### **MIDAC FRANCE S.A.R.L.**

Z.I. - ROUTE DE COLMAR BP 9070  
68502 GUEBWILLER CEDEX - FRANCE  
TEL. +33 03 89 622380 - FAX +33 03 89 622375  
E-mail: contact@midacbatteries.com

#### **MIDAC UK LTD**

15 RADFORDS FIELD - MAESBURY ROAD - OSWESTRY  
SHROPSHIRE - SY10 8RA - UK  
TEL. +44 01691 663111 - FAX +44 01691 653066  
E-mail: inquiries@midacbatteries.com  
SALES OFFICE IRELAND  
141 LOUGHGALL ROAD - COUNTY ARMAGH  
BT 618EW - IRELAND  
TEL. + 44 02837 511744

#### **QUALITY AND FLEXIBILITY**

MIDAC is very committed in providing the market with a wide range of products, ensuring premium quality and maximum flexibility to satisfy any requirement, also engineering customized solutions.

MIDAC'S management system is certified according to:

ISO 9001:2008, ISO/TS 16949:2009, ISO 14001:2004, BS OHSAS 18001:2007, SA 8000:2008



#### **MIDAC SPA SPA HEADQUARTER, SOAVE, VERONA, ITALY**

Unica realtà a produrre batterie avviamento, trazione e stazionarie in un singolo stabilimento produttivo, in 25 anni è diventata una delle aziende leader in Europa con prodotti distribuiti in tutto il mondo.

*The only company that produces Automotive, Motive power and Stationary batteries in the same manufacturing plant, in less than 25 years it has become one of the leading companies in Europe and its products are sold worldwide.*

#### **MIDAC PRODUZIONE VERDE**

Midac utilizza l'energia pulita prodotta dal proprio impianto fotovoltaico per la produzione di batterie e accumulatori, evitando l'emissione di 945 tonnellate di CO<sub>2</sub> ogni anno.

#### **MIDAC GREEN PRODUCTION**

*Midac uses clean energy produced by your photovoltaic system for the production of batteries and accumulators, avoiding the emission of 945 tons of CO<sub>2</sub> each year.*

