

OPzS Batteries for Stationary Applications

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 **SUNLIGHT**
Reliable Battery Solutions

OPzS OVERVIEW

Vented Tubular Plate Batteries for Stationary Applications

SUNLIGHT's OPzS batteries are characterized by **low maintenance requirements, long service life and excellent capacity performance** while operating in high temperature or unstable power network, thus providing a premium **efficient and cost effective energy solution**.

Optimized design, according to DIN international standards, exclusive use of high quality raw materials, robust construction and state of the art manufacturing processes make this OPzS range the **ideal solution for stationary applications demanding high level of safety and reliability**.



CERTIFIED QUALITY

- Fully compliant with IEC 60896-11 requirements for vented lead-acid batteries
- Full conformity to DIN 40736-1 specifications for OPzS cells and DIN 40737-3 for OPzS blocks
- Compliant to the safety requirements of EN 50272-2 for stationary batteries
- Manufactured in SUNLIGHT's European production facilities, certified with ISO 9001, ISO 14001, BS OHSAS 18001

QUALITY FEATURES & PRODUCT BENEFITS

Long service life

Tubular positive plates, unique sliding pole design and special alloys composition offer a design life of 20 years for 2V cells and 18 years for 6V & 12V blocks as well as more than 1600 cycles at 80% Depth of Discharge.

Outstanding performance and reliability

Products of optimum design with use of high quality raw materials, European state-of-the-art production facilities and cumulative experience on advanced submarine battery manufacturing ensure remarkable performance, exceeding values as defined by the DIN international standards.

Minimum maintenance

Low maintenance design with reduced topping up needs. Transparent container for easy visual electrolyte level monitoring.

Space optimization

Racks designed for optimal space utilization, quick installation and easy battery maintenance. 6V and 12V blocks available for applications where space is limited.

Operational safety

Extensive compliance testing performed under European and Global norms and verified by independent 3rd party certification agency.

Complete battery solution

Complete and ready to install systems, batteries in filled and charged or dry charged form with all the necessary accessories. Extensive range of added value services.

Flexibility

Design and production of customized products and services, high volume orders handling capability, fast delivery.

Peace-of-mind

24x7 experienced pre-sales and after sales support, through SUNLIGHT Global Partners Network.

Optimum Total Cost of Ownership (TCO)

Maximum lifetime value and cost efficiency.

The ideal energy solution for stationary applications

TECHNICAL FEATURES & PRODUCT BENEFITS

1 Positive Plates

- Tubular plate design
- Special low antimony lead alloy ($\leq 1.65\%$ Sb)
- Red Lead in-house production by 99,9% Pure Lead
- Dry Filling process

- ✓ Long cycle life
- ✓ Excellent cycling properties
- ✓ Quality and homogeneity
- ✓ High capacity performance
- ✓ Reduced corrosion
- ✓ Reduced self-discharge rate
- ✓ Increased tolerance even in cases of poor charging conditions

2 Negative Plates

- Paste mixture ensures high adherence and cohesion
- Pasted negative plates of grid design
- Optimized low antimony lead alloy
- Robust construction
- Long life expander

- ✓ Stability
- ✓ Long battery life

3 Gauntlet

- Highly microporous material
- Fine pore structure
- Low electrical resistance

- ✓ Effective active material retention
- ✓ Eliminates active mass shedding

4 Bottom Bar

- Ultrasonic welding

- ✓ Secured fit to the gauntlet
- ✓ Long battery life

5 Pole bridge

- Welding with high quality alloy
- Optimized design

- ✓ Increased robustness and durability
- ✓ Consistent and uniform poles-bridge-plate block connection

6 Electrolyte

- High purity sulphuric acid with nominal density of 1.24 +/- 0,01 kg/l (20°C)

- ✓ Low self discharge rates
- ✓ Excellent performance on deep discharges

13 Monoblocks' Internal Intercell Connectors

- Copper bars premium design
- Outside of the container connection

- ✓ High conductivity
- ✓ Safe and long operational life

12 External Intercell Connectors

- Flexible
- Copper
- Fully insulated
- Fixed with plastic head bolt safety screw and probe hole on the top

- ✓ Allow voltage measurements
- ✓ High conductivity
- ✓ Increased safety

11 Pole Insert

- Brass insert
- Threaded female M10 terminal posts

- ✓ High conductivity
- ✓ Maximum torque retention

10 Sliding Poles

- Premium sliding design with rubber seal in the lid
- Corrosion resistance

- ✓ Effectively prevents top lid cracks and acid leakages
- ✓ Positive plate's expansion is safely absorbed
- ✓ Optimum current conductivity
- ✓ Perfect sealing
- ✓ Allow impedance measurements
- ✓ Safe and long operational life

7 Separators

- Manufactured from microporous silica-based PVC material
- Allow migration of ions during charge/discharge
- More acid in the surrounding area of the plates

- ✓ Proof against short circuits
- ✓ High temperature stability
- ✓ Mechanical strength
- ✓ Low internal resistance

8 Container / Lid

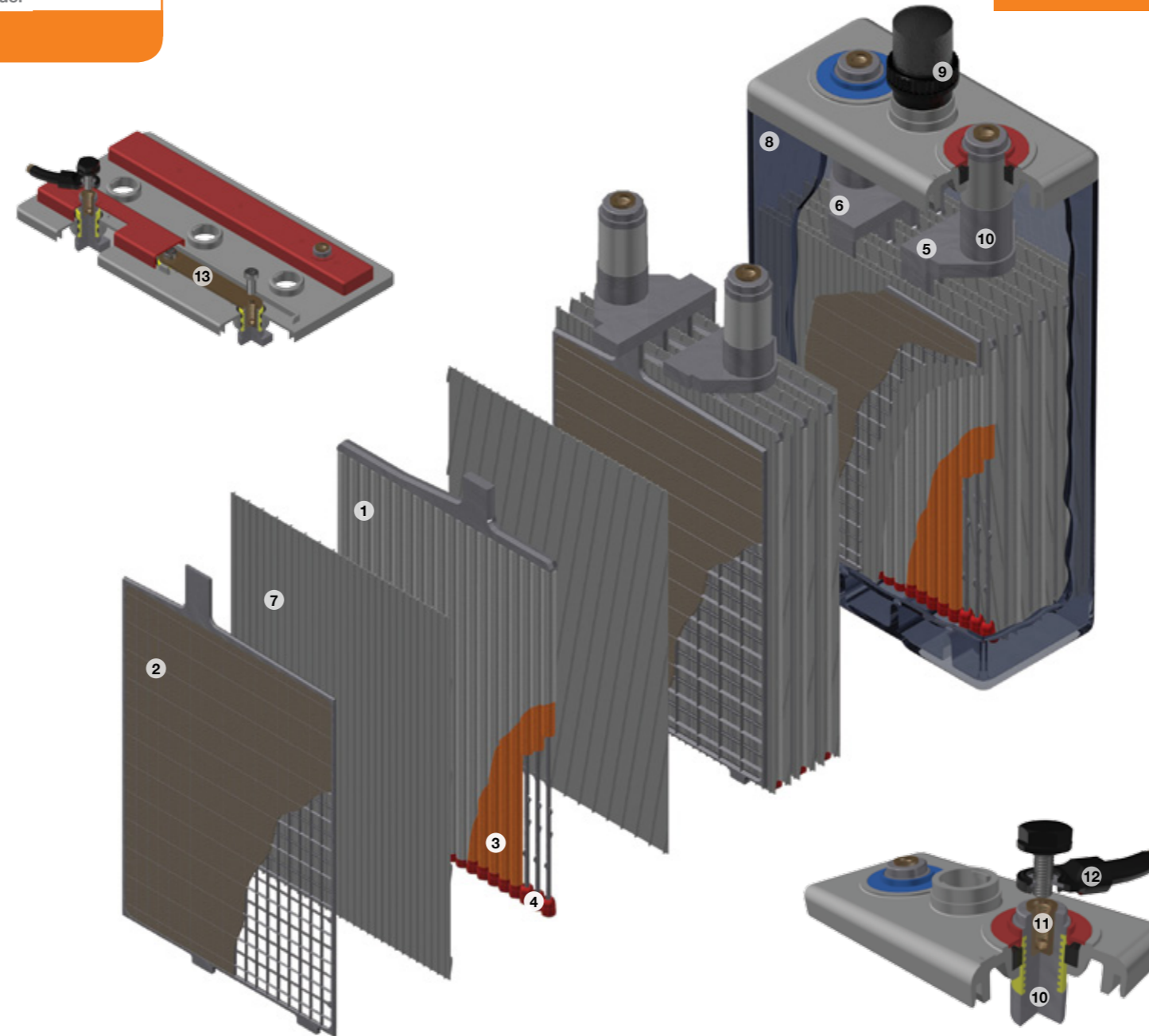
- High impact resistant, transparent SAN (Styrene Acrylonitrile) for the container
- Robust ABS (Acrylonitrile Butadiene Styrene) Material for the lid
- Sealing between container - lid with polyurethane Stobicoll resin
- 100% leakage quality control with high precision froehlich equipment

- ✓ Easy visual electrolyte level monitoring
- ✓ Long term leakage free warranty
- ✓ Unsurpassed mechanical strength
- ✓ Robust and durable battery construction

9 Vent Plugs

- Ceramic plugs available
- Low maintenance design
- Flame arresting
- Funnel plugs also available

- ✓ Efficient containment of acid fumes
- ✓ No electrolyte spillage
- ✓ Reduced water evaporation
- ✓ Funnel plugs allow topping-up and electrolyte density measuring without plug removal
- ✓ Increased safety

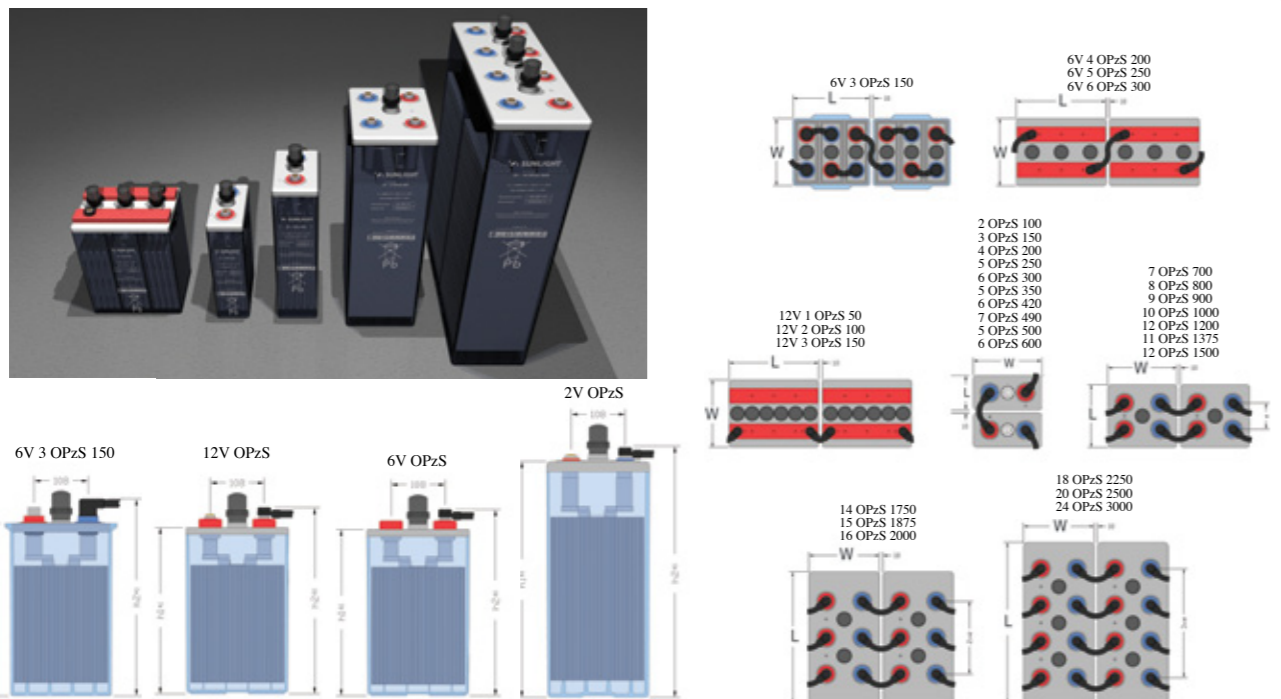


PRODUCT RANGE

| Type* | Positive Plates Number / Size (Ah) | Number of Poles | Nom. capacity (Ah at 20°C) | | | | Length (mm) | Width (mm) | Height ₁ (mm) | Height ₂ (mm) | Poles Dist. (mm) | Wet Weight (approx kg) | Dry Weight (approx kg) | Internal Resistance (mOhm) | Short Circuit Current (A) |
|-----------------|------------------------------------|-----------------|----------------------------|------------------|------------------|------------------|-------------|------------|--------------------------|--------------------------|------------------|------------------------|------------------------|----------------------------|---------------------------|
| | | | C10 (Ah) 1.80 Vpc | C5 (Ah) 1.75 Vpc | C3 (Ah) 1.75 Vpc | C1 (Ah) 1.75 Vpc | | | | | | | | | |
| 2V 2 OPzS 100 | 2 | 2 | 126 | 106 | 91 | 60 | 103 | 206 | 355 | 369 | - | 14 | 8 | 1.620 | 1240 |
| 2V 3 OPzS 150 | 3 | 2 | 180 | 153 | 131 | 88 | 103 | 206 | 355 | 369 | - | 16 | 11 | 1.083 | 1860 |
| 2V 4 OPzS 200 | 4 | 2 | 215 | 186 | 161 | 110 | 103 | 206 | 355 | 369 | - | 18 | 13 | 0.847 | 2380 |
| 2V 5 OPzS 250 | 5 | 2 | 270 | 234 | 203 | 138 | 124 | 206 | 355 | 369 | - | 21 | 15 | 0.671 | 3000 |
| 2V 6 OPzS 300 | 6 | 2 | 324 | 281 | 243 | 165 | 145 | 206 | 355 | 369 | - | 26 | 19 | 0.575 | 3500 |
| 2V 5 OPzS 350 | 5 | 2 | 396 | 346 | 298 | 191 | 124 | 206 | 471 | 485 | - | 28 | 21 | 0.608 | 3300 |
| 2V 6 OPzS 420 | 6 | 70 | 474 | 415 | 356 | 227 | 145 | 206 | 471 | 485 | - | 34 | 24 | 0.518 | 3900 |
| 2V 7 OPzS 490 | 7 | 2 | 541 | 475 | 408 | 260 | 166 | 206 | 471 | 485 | - | 39 | 28 | 0.453 | 4450 |
| 2V 5 OPzS 500 | 5 | 2 | 609 | 526 | 441 | 261 | 145 | 206 | 646 | 660 | - | 42 | 29 | 0.537 | 3750 |
| 2V 6 OPzS 600 | 6 | 2 | 672 | 589 | 499 | 302 | 145 | 206 | 646 | 660 | - | 46 | 33 | 0.447 | 4500 |
| 2V 7 OPzS 700 | 7 | 4 | 836 | 725 | 610 | 364 | 191 | 210 | 646 | 660 | 80 | 60 | 43 | 0.378 | 5350 |
| 2V 8 OPzS 800 | 8 | 100 | 893 | 783 | 665 | 407 | 191 | 210 | 646 | 660 | 80 | 64 | 47 | 0.327 | 6200 |
| 2V 9 OPzS 900 | 9 | 4 | 1028 | 897 | 760 | 461 | 233 | 210 | 646 | 660 | 110 | 73 | 53 | 0.292 | 6950 |
| 2V 10 OPzS 1000 | 10 | 4 | 1114 | 977 | 830 | 508 | 233 | 210 | 646 | 660 | 110 | 78 | 57 | 0.261 | 7750 |
| 2V 12 OPzS 1200 | 12 | 4 | 1329 | 1166 | 988 | 596 | 275 | 210 | 646 | 660 | 140 | 91 | 66 | 0.228 | 8850 |
| 2V 11 OPzS 1375 | 11 | 4 | 1623 | 1412 | 1179 | 669 | 275 | 210 | 797 | 811 | 140 | 111 | 76 | 0.238 | 8500 |
| 2V 12 OPzS 1500 | 12 | 4 | 1630 | 1439 | 1213 | 703 | 275 | 210 | 797 | 811 | 140 | 115 | 81 | 0.225 | 9000 |
| 2V 14 OPzS 1750 | 14 | 6 | 1978 | 1726 | 1445 | 825 | 397 | 212 | 772 | 786 | 110 | 143 | 96 | 0.195 | 10350 |
| 2V 15 OPzS 1875 | 15 | 6 | 2114 | 1855 | 1560 | 902 | 397 | 212 | 772 | 786 | 110 | 149 | 103 | 0.176 | 11500 |
| 2V 16 OPzS 2000 | 16 | 6 | 2186 | 1930 | 1635 | 964 | 397 | 212 | 772 | 786 | 110 | 155 | 109 | 0.160 | 12600 |
| 2V 18 OPzS 2250 | 18 | 8 | 2689 | 2337 | 1961 | 1132 | 487 | 212 | 772 | 786 | 110 | 184 | 125 | 0.140 | 14450 |
| 2V 20 OPzS 2500 | 20 | 8 | 2926 | 2553 | 2150 | 1253 | 487 | 212 | 772 | 786 | 110 | 201 | 135 | 0.125 | 16200 |
| 2V 24 OPzS 3000 | 24 | 8 | 3361 | 2954 | 2493 | 1454 | 576 | 212 | 772 | 786 | 140 | 230 | 158 | 0.108 | 18800 |
| 6V 3 OPzS 150 | 3 | 2 | 177 | 154 | 133 | 88 | 233 | 224 | 345 | 377 | - | 41 | 30 | 1.138 | 1780 |
| 6V 4 OPzS 200 | 4 | 50 | 215 | 190 | 165 | 112 | 272 | 205 | 332 | 361 | - | 47 | 35 | 0.900 | 2240 |
| 6V 5 OPzS 250 | 5 | 2 | 287 | 250 | 216 | 142 | 380 | 205 | 332 | 361 | - | 61 | 44 | 0.760 | 2660 |
| 6V 6 OPzS 300 | 6 | 2 | 312 | 277 | 242 | 161 | 380 | 205 | 332 | 361 | - | 67 | 51 | 0.667 | 3040 |
| 12V 1 OPzS 50 | 1 | 2 | 63 | 55 | 48 | 32 | 272 | 205 | 332 | 361 | - | 38 | 24 | 3.226 | 620 |
| 12V 2 OPzS 100 | 2 | 50 | 103 | 93 | 83 | 58 | 272 | 205 | 332 | 361 | - | 49 | 38 | 1.613 | 1260 |
| 12V 3 OPzS 150 | 3 | 2 | 150 | 137 | 122 | 86 | 380 | 205 | 332 | 361 | - | 70 | 53 | 1.138 | 1780 |

*Cells type according to DIN 40736-1 and monoblocks type according to DIN 40737-3 ** Includes installed connectors and shrouds.

DRAWINGS



ADDED VALUE SERVICES

- Design and implementation of turnkey solutions
- Installation & maintenance services according to EN50272-2 safety requirements (CE compliance)
- 360° Technical Support 24x7 through SUNLIGHT Global Partners Network
- Training and consulting
- Battery Collection and Recycling Services

WHY SUNLIGHT

- 30 years of Experience in Battery Business**
 - TOP 3 in the global advanced technology battery sector
 - TOP 5 in the European industrial battery sector
 - 98% of battery production is being exported
 - Design and manufacturing of numerous premium solutions complying to demanding requirements
- “One Stop Solution”**
 - From single components/products to turn-key solutions
 - Robust high quality products & services portfolio
 - Lifetime value maximization & total cost of ownership approach
- Extensive Global Know-how**
 - Co-operation with TOP market players and equipment providers worldwide
 - A fast growing Global Partners Network
- Exceptional Customer Service**
 - Highly experienced engineering team for design & development
 - Pre-Sales & After-Sales Service providing global support
 - Project Management competence

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