Low maintenance TAB OPzS vented stationary batteries

LET US LEAD YOU INTO THE WORLD OF EVERLASTING ENERGY AND INTRODUCE YOU WITH OPzS STATIONARY BLOCKS AND CELLS PRODUCED IN THE CONVENTIONAL LEAD-ACID TECHNOLOGY.

The batteries are distinguished for:
- high capacity
- long life time
- reduced maintenance
- low self-discharging
- quick and simple acid level control
- economical water consumption
- appropriate dimensions and weight
- the lowest and constant maintenance current.

The individual cells (2V) and blocks (6V and 12V) are in translucent plastic containers made of styrenacrylnitril (SAN), a material which is extraordinarily resistant to chemical influences and mechanical damage.

The stationary batteries of the type OPzS are manufactured according to the DIN 40736, EN 60896 and IEC 896-1 regulations.

APPLICATION
Stationary batteries of the OPzS type are intended for the supply of telecommunication facilities, computers, emergency lighting, alarm, control and monitoring systems in power plants and distribution stations, at railway stations, airports etc.

Due to their extremely low self discharging they are suitable for plants supplied by solar cells.

OPERATION MAINTENANCE
IT IS RECOMMENDED THAT THE OPzS BATTERIES ARE INSTALLED IN THE SYSTEMS WHERE THEY ARE CONSTANTLY CONNECTED TO THE RECTIFIER.

The battery can be float-charged with voltage of 2.23 to 2.25 V/cell, or, in case of rapid charging after discharge, with voltage of 2.35 to 2.40 V/cell.

Rapid charging usually lasts another 3-5 hours after the voltage has already reached 2.35 to 2.40 V/cell. After that, an automatic switchover to the constant maintenance voltage of 2.23 to 2.25 V/cell takes place. Battery maintenance is reduced to a minimum and required only from time to time.

At normal operation, only some distilled water has to be added once in a 2-3 year period and, if necessary, the surface of cells has to be cleaned. All stated voltage values are valid for the temperature range from 15 to 25 degrees C. Of the range, the corrections given by the battery producer are necessary.

FOR DETAIL INFORMATION
PLEASE CHECK OUR OPERATION MANUAL.

CONSTRUCTION
The positive armored plate is of a tubular type, which means that the active substance (PbO2) is contained in special gauntlet made of polyester fibres and hardened by an impregnation compound. Such construction prevents escaping of an active substance during the operation and ensures a long life time. The grids of a positive and a negative plate are made of special alloy maintaining the structure of casting.

Negative plates are pasted-type plates with special alloys maintaining porosity of an active substance during the operation. As an electrolyte, a diluted sulphuric acid (H2SO4) with a density of 1.24 ± 0.01 kg/l at 20 degrees C, and at a maximum permitted level is used. Separators separating the positive plates from the negative ones are made of microporous plastic material with a low electric resistance.

The cell containers are made of transparent SAN, while lid of nontransparent SAN or ABS material (SAN for blocks, Albs for 2V cells).

In a special process, the lids are tightly sealed to the container. The terminal plugs are sealed with rubber seals. This prevents any escape of electrolyte from the cells.

Due to the transparent containers the electrolyte level is clearly visible, the maximum and minimum levels are marked on a self-adhesive acid-proof label on a container side.

ORDERS
IN ORDER THAT THE BATTERIES WOULD MEET ALL YOUR DEMANDS, WE KINDLY ASK YOU TO ENCLOSE THE FOLLOWING DATA WITH YOUR ORDER:
- kind of consuming device
  (telephone plant, DC-AC converter, emergency lighting etc.)
- operating energy of the consumer (kW, kVA, cos φ)
- minimum and maximum allowable rated voltage at consuming device (V)
- time diagram of a consumer load, and the required time autonomy (reserve)
- expected voltage drop in the supply lines
- surrounding temperature in the battery room (average, minimum, maximum)
- type of rectifier, its characteristics, regulating point (I) or (U), respectively, float voltage (V) (direct voltage of rapid-charging current Imax (A), float charging voltage)
- outline or dimensions of a battery room
- type of installation (welded, bolted, on wooden or metal racks, in case, on earthquake-proof racks)
- battery maintenance accessories (amperometers, thermometers, jug ...)
- battery type filled up with electrolyte and electrically charged or dry-charge battery.

IN CASE OF PROBLEMS WITH ORDERING WE WILL BE GLAD TO ADVISE AND ASSIST YOU IN THE SELECTION OF THE SUITABLE TYPE OF BATTERY.

IMPROVED DESIGN
FOR BOLTED VERSION
TERMINAL POST

NEW TYPE OF POLE FOR STATIONARY APPLICATIONS
HAS A SPECIAL DESIGN WITH EMBRACED INJECTED PLASTIC AROUND PRE-MACHINED LEAD PART IN THE SEALING AREA.

PLANE AND CLEAN SURFACE OF PLASTIC PART IN COMBINATION WITH RUBBER SEALING RING ENSURES PERFECT SEAL. LONG PLASTIC INJECTED PART ALLOWS POLE GROWTH AND MOVING UPWARDS BY THE GROWTH OF POSITIVE PLATE. SUCH CONSTRUCTION ENSURES TIGHT POLE BUSHING WITHOUT ANY CORROSION OR DETERIORATION DURING BATTERY LIFE.
TAB OPzS BLOCKS

TAB OPzS STATIONARY BLOCKS (CELLS) ARE PRODUCED IN THE CONVENTIONAL LEAD-ACID TECHNOLOGY.

Stationary batteries of the OPzS type are intended for the supply of telecommunication facilities, computers, emergency lighting, alarm and monitoring systems in power plants and distribution stations, at railway stations, airports etc.

TAB OPzS CELLS

12V 2 OPzS 100

Electrolyte density: 1.24 ± 0.01 kg/l at 20 °C.

All measures and weights are within standard production tolerances. Electrical values are approximate. Technical modifications are reserved without prior notice.

OPERATIONAL DATA

OPzS cells (block)*

- Design life: Up to 20 years (18 years)* at 20 °C
- Water refilling interval: More than 2 years at 20 °C
- IEC 896-1 cycles: 1500 (1300)*
- Self-discharge: Approximately 2% per month at 20°C
- Operational temperature: -20 °C to 50 °C recommended 10 °C to 30 °C
- Ventilation requirement: According to EN 62485-2
- Safety standards: EN 40 737 part 1
- Testing according: IEC 896-I
- VOE 6510 part 2 and EN IEC 61489-2
- Transportation: No dangerous goods during road transport

CHARACTERISTICS

OPzS cells (block)*

- Current without limitation
- Float charge:
  - U = 2.23 V/cell ± 1 %, depending on discharge current
  - Min. of 0.9 U0 - 0.004 UV, between 10 °C and 30 °C
  - Between 10 °C and 30 °C in the monthly average
- Boost charge: U = 2.35 to 2.40 V/cell, time limited

DISCHARGE CHARACTERISTICS

OPzS cells (block)*

- Initial capacity: 100 %
- Depth of discharge:
  - 100 %
  - Normally up to 80 %
  - More than 80 %: 300 or discharges beyond final discharge voltages (dependent on discharge current) have to be avoided

MAINTENANCE

OPzS cells (block)*

- Every 6 months: Check battery voltage, pilot block voltage, temperature
- Every 12 months: Take down battery voltage, block voltage, temperature

CONNECTIONS

Dimensions

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Dimensions

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Electrolyte density: 1.24 ± 0.01 kg/l at 20 °C.

All measures and weights are within standard production tolerances. Electrical values are approximate. Technical modifications are reserved without prior notice.
TAB OGi BATTERIES

TAB OGi BLOCK BATTERIES ARE ROBUST VENTED LEAD-ACID BATTERIES DESIGNED FOR INDUSTRIAL APPLICATIONS IN POWER SUPPLY WITH HIGH SAFETY REQUIREMENTS.

TAB OGi block batteries can be used for both long duration discharge (10 hours) and short duration discharge (few minutes).

The main areas of application are BC power supply systems in power stations, UHS systems, industrial systems and emergency power supply systems.

They can also be used for engine starting and PV power systems.

**Design**

- Positive Electrode
  - Robust grid plate with circular bars in a corrosion resistant PbSe alloy > 3 % Sn.
- Negative Electrode
  - Flat plate with long life expander and line antimony alloy.
- Separation
  - Membranes separator.
- Electrolyte
  - Sulphuric acid of 1.24 kg/l.
- Container
  - High impact, transparent SAN lid.
- Battery
  - SAN in dark grey colour.
- Blocks (with GR/CBL LS)
  - 4V 6V, 8V, 10V.
- Plugs
  - Ceramic plugs or optional ceramic flange plugs according IEC 60740.
- Pole sealing
  - 100 % gas and electrolyte tight, sliding plug.
- HRC, brass insert.
- Connector
  - Flexible insulated copper cable, with cross-section of 35, 50, 70, 95 or 120 mm².
- Kind of Protection
  - IP 35 according DIN 40650, touch protected according VBG 4.

**Charging**

- IU : Characteristic
  - Linear without limitation.
- Float Charge
  - U = 2,23 Volt x 1,1 between 1°C and 40°C.
- dU/dT = 0,004 mV/k below 10°C in the monthly average.
- Boost Charge
  - U = 2,58 to 2,85 Volt x time limited charging time up to 92 %.
  - 96 with 1,54 Volt initial current. 2,23 Volt, 96 % C10 discharged.

**Discharge Characteristics**

- Reference temperature: 20°C.
- Initial capacity: 100 %.
- Depth of discharge: Normally up to 80 %.
- More than 80 % DOD or discharges beyond final discharge voltages (dependent on discharge currents) have to be avoided.

**Maintenence**

- Every 6 months.
  - Check battery voltage, pilot block voltage, temperature.
- Every 12 month.
  - Take down battery voltage, block voltage, temperature.

**Operational Life**

- Up to 15 years at 20°C.
- Up to 7.5 years at 30°C.
- Up to 4 years at 40°C.

**Water Refilling Interval**

- More than 2 years at 20°C.
- IEC 896-1 CYCLES.
- To avoid:
  - Self-discharge.
  - Prolonged charging at 20°C.

**Electrical Values**

- Electrolyte density: 1.24 ± 0.01 kg/l at 20 °C.
- All measures and weights are within standard production tolerances.
- Electrical values are approximatives.
- Technical modifications are reserved without prior notice.
TAB UPS BATTERIES

TAB UPS BATTERIES ARE ROBUST AND FOR HIGH DISCHARGE - PERFORMANCES OPTIMISED LEAD-ACID BATTERIES.

The main application for TAB UPS are Uninterruptable Power Supplies (UPS) in the size of 50 to 250 kVA. The battery is perfectly suited to start diesel engines for the auxiliary power supply.

**CONNECTIONS DIMENSIONS**

**TAB UPS** BATTERIES

**DESIGN**

- **POSITIVE ELECTRODE**
  - Robust plate with circular bars in a corrosion-resistant PbSe alloy + 2 % Sb
- **NEGATIVE ELECTRODE**
  - Flat plate with low life expander and low antimony alloy
- **SEPARATION**
  - Microporous separator
- **ELECTROLYTE**
  - Sulphuric acid of 1,28 kg/l
- **CONTAINER**
  - High impact, transparent SAN
- **LID**
  - SAN in dark grey colour
- **BLOCKS WITH BLIND CELLS**
  - 4V, 6V, 8V, 10V
- **PLUGS**
  - Ceramic plugs or optional ceramic funnel plugs according to DIN 40740
- **POLE SEALING**
  - 100 % gas-and electrolyte-tight, sliding-pole
- **POLE**
  - M10, brass insert
- **CONNECTOR**
  - Flexible insulated copper cable, with cross-section of 35, 50, 70, 95 or 120 mm²

**CHARGING**

- IU - CHARACTERISTIC
  - Imax without limitation
- FLOAT CHARGE
  - U = 2,25 to 2,27 V/cell + 1 %, between 10 °C and 55 °C
  - dU/dT = 0.004 mV/°K below 10 °C in the monthly average
- BOOST CHARGE
  - U = 2,25 to 2,40 V/cell, time limited

**DISCHARGE CHARACTERISTICS**

- **REFERENCE TEMPERATURE**
  - 20 °C
- **INITIAL CAPACITY**
  - 100 %
- **DEPTH OF DISCHARGE**
  - Normally up to 80 %
  - More than 80 % DOD or discharges beyond final discharge voltages (dependent on discharge current) have to be avoided

**MAINTENANCE**

- EVERY 6 MONTH
  - Check battery voltage, pilot block voltage, temperature
- EVERY 12 MONTH
  - Take down battery voltage, block voltage, temperature

**OPERATIONAL DATA**

- **LIFE**
  - Up to 12 years at 20 °C
  - Up to 6 years at 30 °C
  - Up to 3 years at 40 °C
- **WATER REFILLING INTERVAL**
  - More than 3 years at 20 °C
- **IEC 896-1 CYCLES**
  - 800
- **SELF-DISCHARGE**
  - Approx. 3 % per month at 20 °C
- **OPERATIONAL TEMPERATURE**
  - -20 °C to 55 °C, recommended 10 °C to 30 °C
- **VENTILATION REQUIREMENT**
  - according to EN IEC 62485-2
- **MEASUREMENTS ACCORDING**
  - DIN 40 737 part 3
- **TESTS ACCORDING**
  - IEC 896-1
- **APPLICABLE STANDARDS**
  - VDE 0510 part 2 and EN IEC 62485-2
- **TRANSPORT**
  - No dangerous goods during road transport

**OPERATIONAL LIFE**

- 12 years at 20 °C
- 6 years at 30 °C
- 3 years at 40 °C

**WATER REFILLING INTERVAL**

- More than 3 years at 20 °C

**IEC 896-1 CYCLES**

- 800

**SELF-DISCHARGE**

- Approx. 3 % per month at 20 °C

**OPERATIONAL TEMPERATURE**

- -20 °C to 55 °C, recommended 10 °C to 30 °C

**VENTILATION REQUIREMENT**

- according to EN IEC 62485-2

**MEASUREMENTS ACCORDING**

- DIN 40 737 part 3

**TESTS ACCORDING**

- IEC 896-1

**APPLICABLE STANDARDS**

- VDE 0510 part 2 and EN IEC 62485-2

**TRANSPORT**

- No dangerous goods during road transport

**6V 7 UPS 700**

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100W is the averaged power per plate at the 10 min rate Uf = 1,63V/cell.

Electrolyte density 1,28 ± 0,01 kg/l at 20 °C.

All measures and weights are within standard production tolerances.

Electrical values are approximative.

Technical modifications are reserved without prior notice.
TAB TOPzS BATTERIES

LOW MAINTENANCE TAB TOPzS VENTED STATIONARY BATTERIES

APPLICATION
Stationary batteries of the TOPzS type are specially designed for solar systems. Due to their extremely low self-discharging and tubular positive plates they are suitable for off-grid solar systems.

CONSTRUCTION
The positive armored plate is of a tubular type, which means that the active substance (PbO2) is contained in special gauzette made of polyester fibres and hardened by an impregnation compound. Such construction prevents escaping of an active substance during the operation and ensures a long life-time. The grids of a positive and a negative plate are made of special low percentage (less than 2 %) antimony alloy with addition agents for improvement of crystalline structure of casting. Negative plates are pasted-type plates with special alloys maintaining porosity of an active substance during the operation. As an electrolyte, a diluted sulphuric acid (H2SO4) with a density of 1.24 ± 0.01 kglit at 20 degrees C, and at a maximum permitted level is used. Separators separating the positive plates from the negative ones are made of microporous plastic material with a low electric resistance. In a special process, the lids are tightly sealed with rubber seals. This prevents any escape of electrolyte from the cells. Due to the transparent containers the electrolyte level is clearly visible, the maximum and minimum levels are marked on a self-adhesive acid-proof label on a container side.

TWO VERSIONS OF BATTERIES ARE BEING MANUFACTURED:
- DRY-CHARGE VERSION: a battery has to be filled up with an electrolyte and supplementary charged before use. The plates are already formed and in a special process protected against oxidation. They can be stored without problems.
- ELECTROLYTE-CHARGE: battery can be installed immediately, because it is already filled up with electrolyte and electrically charged as well. The capacity test has already been performed by the producer.

The batteries are distinguished for:
- HIGH CAPACITY
- LONG LIFE TIME
- REDUCED MAINTENANCE
- LOW SELF-DISCHARGING
- QUICK AND SIMPLE MAINTENANCE CURRENT
- THE LOWEST AND CONSTANT DEPTH OF DISCHARGE
- 100 %
- 20 °C at C10 (1.8 V/cell) and 25 °C
- INITIAL CAPACITY
- 100 %
- DEPTH OF DISCHARGE
- Normally up to 80 %
- More than 80 % DOD or discharges beyond final discharge voltages (dependent on discharge current) have to be avoided
- 100 %
- 20 °C at C10 (1.80 V/cell) and 25 °C
- REFERENCE TEMPERATURE
- 20 °C at C10 (1.85 V/cell)
- UP TO 80 %
- FLOAT VOLTAGE
- Imax without limitation
- BOOST CHARGE
- U = 2,23 V/cell ± 1 %
- U = 2,35 to 2,40 V/cell
- MAXIMUM CURRENT
- 15 A
- 75 A
- 100 A
- 120 A
- SELF-DISCHARGE
- Approximately 3 % per month at 20 °C
- OPERATIONAL LIFE
- Up to 15 years
- OPERATIONAL TEMPERATURE
- -20 °C to 55 °C
- TESTS ACCORDING
- IEC 62485-2
- EN 60896-2
- EN 60896-1
- EN 62619
- EN 62485-2
- EN 61427
- EN 61851-1
- IEC 61553
- IEC 61851-2
- IEC 61851-3
- IEC 61851-4
- ADR (road transport)

ELECTROLYTE CHARGE
- D2G - CHARACTERISTIC
- Imax without limitation
- FLOAT VOLTAGE
- U = 2,23 V/cell ± 1 %
- BOOST CHARGE
- U = 2,35 to 2,40 V/cell

CHARGING CHARACTERISTICS
- REFERENCE TEMPERATURE
- 20 °C at C10 (1.80 V/cell) and 25 °C
- INITIAL CAPACITY
- 100 %
- DEPTH OF DISCHARGE
- Normally up to 80 %
- More than 80 % DOD or discharges beyond final discharge voltages (dependent on discharge current) have to be avoided

OPERATIONAL DATA
- OPERATIONAL LIFE
- Up to 15 years
- IEC 62485-2 CYCLES
- 1200
- SELF-DISCHARGE
- Approximately 3 % per month at 20 °C
- OPERATIONAL TEMPERATURE
- -20 °C to 55 °C
- TESTS ACCORDING
- IEC 62485-2
- EN 60896-2
- EN 60896-1
- EN 61427
- SAFETY STANDARD
- VENTILATION
- EN 62485-2

MAINTENANCE
- EVERY 6 MONTH
- Check battery voltage
temperature
- EVERY 12 MONTH
- Take down battery voltage
temperature
- Take down battery voltage
temperature

OPERATION - MAINTENANCE
For more detail information please check our operation manual.

TRANSPORT
- Batteries are not subject to ADR (road transport).

Electrolyte density: 1.24 ± 0.01 kglit at 20 °C.
* Uf=1.85V/cell at 25 °C.

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TAB OPzV range of valve regulated lead acid stationary batteries combine the benefits of recombination technology (i.e., virtually no maintenance due to very low gas emissions) plus the advantages of conventional vented batteries with positive tubular plates (i.e., long life and excellent cycling capability).

TAB OPzV VALVE REGULATED LEAD ACID BATTERIES ARE THE IDEAL ENERGY SOURCE FOR MANY DIFFERENT STANDBY APPLICATIONS.

DESIGN

TUBULAR POSITIVE PLATES
- Special grid construction, pressure cast from antimony free alloy, with highly porous gauntlets that retain the active material

PASTED NEGATIVE PLATES
- Service lives consistent with the positive plates

ELECTROLYTE
- Gel structure

SEPARATORS
- Extremely high porosity and low internal resistance

CONTAINERS AND LIDS
- Made of plastic (ABS) material. Also available in ABS flame retardant material as an option (according to IEC 707 FV0)

TERMINALS
- Female treated terminal (M10) perfect contact and low resistance with flexible cable connectors

POST SEALS
- Prevents electrolyte leakage and terminal corrosion

CONNECTORS
- Flexible, fully insulated cable connectors screwed (with 20 ± 1 Nm) to the terminal with an insulated screw having a probe hole on the top for electrical measurement

ONE WAY RELIEF VALVE
- Opens at low pressure

INSTALLATION

CELLS ARE NORMALLY INSTALLED IN AN UPRIGHT POSITION ON STEEL STANDS

CHARGING

FLOAT VOLTAGE
- Standby use 2.25 V/cell

BOOST RECHARGE
- Maximum voltage of 2.35 - 2.40 V/cell with a maximum current of 0.25 C10 (A)

OPERATIONAL DATA

OPERATIONAL LIFE
- Up to 20 years

IEC 896-1 CYCLES
- 1200

SELF-DISCHARGE
- Approx. 2 % per month at 20 °C

TESTS ACCORDING
- IEC 896-1, EN 60896-1, EN 61427

According to DIN 40742, IEC 60896-2