Lahmeyer Compactstation®

Planning folder
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The diversity of Lahmeyer Compactstations® contains the series LCS-E.7, NDV400, NDV1200-2600, WPS2500 and special types.

With Lahmeyer Compactstations® nearly every thinkable application for your demands is possible.

Our smallest substation:

LCS-E.7

The allrounder:

NDV400

NDV400 with concrete base

The specialist for high power solutions:

NDV1200 to NDV2600
The diversity of **Lahmeyer Compactstations®** contains the series LCS-E.7, NDV400, NDV1200-2600, WPS2500 and special types.

With **Lahmeyer Compactstations®** nearly every thinkable application for your demands is possible.

The substation for 36kV:

**WPS 2500**

Our rental substations:

**e.g. LCS-E.7**

Our rental substations:

**e.g. NDV 400**
# Standard products - selection criteria

<table>
<thead>
<tr>
<th>Type of substation</th>
<th>operation</th>
<th>max. power</th>
<th>max. dimensions substation</th>
<th>max. dimensions transformer</th>
<th>Measuring</th>
<th>Meter boxes</th>
<th>compensation</th>
<th>More rooms</th>
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<td>1600kVA(^2) (2x 1000kVA)</td>
<td>3284 x 2300 x 2340</td>
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<td>4500 x 2500 x 3080</td>
<td>2500 x 2150 x 2200 / 2650(^6)</td>
<td>Y Y Y Y</td>
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</table>

\(^1\) Use of 800kVA-transformer only after consultation with SBG Neumark
\(^2\) max. length L = 1350mm when use of Siemens 8DJH 4-F or Schneider 4-F
\(^3\) valid for hermetic oil transformer w/o wheels; CR-transformers incl. protection range
\(^6\) 1. dimension: top of tank, 2. dimension: highest point (accessories)

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Please note, according to EN 62271-202, that in case of installation inside a substation the transformer must not be steadily operated with nominal power. The transformer has to be operated with reduced power depending on ambient conditions and the housing class of the substation.

Equally, the LV-switchgears are subject to a reduction of the nominal current depending on ambient conditions.
Lahmeyer Compactstations® apply to following technical rules:

- DIN VDE 1000: General guiding principles responsible to security of technical products
- DIN VDE 0101: Heavy current gears with rated voltages over 1 kV
- DIN VDE 0105-100: Operation of heavy current plants
- DIN EN 60071-1 (VDE 0111 part 1): Insulation co-ordination
  Part 1: Definitions, principles and rules
- DIN EN 60071-2 (VDE 0111 part 2): Insulation co-ordination
  Part 2: Application guide
- DIN EN 60445 (VDE 0197): Basic and safety principles for man-machine interface, marking and identification - Identification of equipment terminals and conductor terminations
- DIN EN 60947-1 (VDE 0660-100): Low-voltage switchgear and controlgear
  Part 1: General rules
- CENELEC HD 603 S1/A3: Heavy current cables; part 603: Distribution cables of rated voltage U0/U 0,6/1 kV
- CENELEC HD 620 S1/A3: Heavy current cables; part 620: Distribution cables with extruded insulation for rated voltages from 3,6/6 (7,2) kV to 20,8/36 (42) kV
- DIN EN 61442 (VDE 0278 part 442): Test methods for accessories for power cables with rated voltages from 6 kV (Um = 7,2 kV) up to 36 kV (Um = 42 kV)
- DIN EN 60529 (VDE 0470 part 1): Degrees of protection provided by enclosures (IP code)
- DIN EN 60076-10 (VDE 0532 part 76-10): Power-transformers
  Part 10: determination of sound levels
- DIN VDE 0660 part 514: Low voltage-switch device combinations; protection against electric shock; protection against direct accidental touch of dangerous active parts
- DIN EN 62271 part 1 (VDE 0671-1): High-voltage switchgear and controlgear
  Part 1: Common specifications
Technical rules

DIN EN 62271 part 202  High-voltage switchgear and controlgear - Part 202: High voltage/low voltage prefabricated substation

DIN EN 61230  Live working - Portable equipment for earthing or earthing and short-circuiting
(VDE 0683 part 100)

DIN EN ISO 12944  Paints and varnishes - Corrosion protection of steel structures by protective paint systems

DIN 4102  Fire behaviour of building materials and building parts

DIN EN 14598 part 1  Reinforced thermosetting moulding compounds - Specification for Sheet Moulding Compound (SMC) and Bulk Moulding Compound (BMC)

VDE 0100  Standards for low voltage installations

DGUV Order 3  Accident prevention regulation: electric installations and means of production

The regulations of the water regime law (WHG = „Wasserhaushaltsgesetz“) of the Federal Republic of Germany and the regulation concerning electromagnetic fields, 26. BImSchG (federal immission law) are fulfilled.

Installation, initial start-up and operation of the substation have to be done by qualified personnel, trained in use of MV-switchgears, transformers, LV-panels, and in accordance with the appropriate regulations and standards.

⚠️ Following safety rules acc. to DIN VDE 0105 shall be observed:

1) Disconnect mains!
2) Prevent reconnection!
3) Test for absence of harmful voltages!
4) Ground and short circuit!
5) Cover or close off nearby live parts!
Anticorrosive Coating

All Lahmeyer Compactstations® apply steel sheet as housing material and the time-proven DUPLEX-coating-system.

DUPLEX-system = Galvanising + Powder coating

Corrosion protection with DUPLEX-system has been established in many sectors of our industrial society, architecture, automotive and energy supply.

Advantages of the DUPLEX-system:
- Long duration of protection
- Industrial work process and technology, by that safe procedures and defined quality
- Many possibilities to design

Steel, zinc and powder coating act as an ideal combination!

Due to this synergy effect, the duration of protection is ca. **1.8 to 2.5 times longer** than the single durations of galvanising and powder coating. This is because the zinc layer is protected from atmospheric and chemical influences.

- Zinc layer remains in mint condition
- Damages on the coating have no impact on the zinc
- No rust penetration

For our housing parts, we use continuous galvanised steel sheet. Applied steel type is DX52D+Z275 according to DIN10142.

The zinc layer amounts ca. 275g/m², which equates ca. 20µm thickness.

The substation is at least single layer powder coated (>70µm) 100% non-porous.

Advantages of powder coating:
- Superior to wet coating
- Environment-friendly
- Industrial work process
- Good adhesion on zinc
- High bending strength, highly impact- and scratch-resistant
- Non-porous
- Flexible Design
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Lahmeyer Compactstation® LCS-E.7
is suitable for transformers with:

- Power up to 630 kVA
- Voltage up to 24 kV

Use:

- Frontside operated
- Grid- or Customer-substation, LV-measurement possible

Dimensions:

- Footprint 2,65 m²
- Area with opened doors 5,05 m²
- L x W x H 2540 x 1180 x 2086 mm

Weights:

- Empty housing ca. 720 kg
- Total ca. 3200 kg
  (approx. with DIN-transformer 630kVA and equipment)

Design:

Housing:

- Housing class = 15K
- Steel sheet, galvanised and powder coated,
  Transformer-compartment accessible by push-in plug,
  lockable doors for MV- and LV-compartment
- Standard colour: Olive grey (RAL 6003)
- other RAL-colours possible (additional charge),
  Graffiti-protection possible

Base:

- With oil collecting pan
- steel sheet, galvanised and powder coated
  with Lahmeyer-cable inlets

Equipment:

MV-compartment:

- SBG HV-fuse-comp. 12/24 kV (air-insulated)
- SF6-insulated MV-switchgears with max.:
  - Siemens 8DJH 12/24 kV 3F
  - Driescher Minex C 12/24 kV 4F

Transformer:

- Hermetic distribution transformer
  up to 630 kVA
- max. dimensions transformer:
  L x W x H = 1250 x 900 x 1650 mm

LV-distribution:

- or LV-strip type fuse disconnector 910 A
- or LV-fuse switch, size 3/4a up to 1250 A
- or MCCB up to 1000 A
- max. 8 outgoings
- LV-strip type fuseways or
- LV-strip type fuse disconnector size 1/2/3

Option LV-measuring:

(910A-strip type disconnector as main switch)

- 4 outgoings and meter box size 1
- 3 outgoings and meter box size 2

General equipment options:

- synchronisation
- current metering
- voltage metering
- multimeters
- sockets
- lighting
- fuses
Excavation plan
LCS-E.7

Thickness of horizontal level concrete-base-plate about 200mm
or
paved, horizontal level sand bed
depending on ground

Soil pressure up to 150 kN/m²
Lifting plan
LCS-E.7

Wood bar
Diameter 45mm
Loading plan
LCS-E.7

Anti-slip pads
restraint

Section view A-B

trailer

lugs

Trailer lugs

trailer
Example LCS-E.7
without housing

MV-switchgear  MV-cable: N2XY 35RM/16  Outgoings  Multi-function device, instruments, fuses, terminal block

Base with oil collecting pan  N/PEN-bar  PE-bar  NH-strip-type fuse-switch-disconnector  Spare outgoings
Example LCS-E.7 with housing

- Housing
- Protection cover (with non-insulated MV-bushings)
- Door, with latching at 90° and 135°
- Lifting lug
- Transformer compartment (without push-in-plugs)
- LV-distribution panel
Lahmeyer Compactstation® NDV400 is suitable for transformers with:

- Power: up to 800 kVA
- Voltage: up to 24 kV

Use:

- Longside operated
- Grid-, Customer- or connection substation with several LV- and MV-measurements possible

Dimensions:

- Footprint: 4.35 m²
- Area with opened doors: 6.50 - 8.90 m²
- L x W x H: 3010 x 1710 x 2411 mm

Masses:

- Empty housing: ca. 820 kg
- Total: ca. 3800 kg (approx. with DIN-transformer 630kVA and equipment)

Design:

Housing:

- Housing class = 20K
- Steel sheet, galvanised and powder coated, Transformer-compartment accessible by push-in plug,
- Lockable doors for MV- and LV-compartment
- Standard colour: Pebble grey (RAL 7032)
- Other RAL-colours possible (additional charge), Graffiti-protection possible

Base:

- With oil collecting pan
- Steel sheet, galvanised and powder coated, with Lahmeyer-cable inlets

Equipment:

MV-compartment:

- SBG HV-fuse-comp. 12/24 kV (air-insulated)
- SF6-insulated MV-switchgears with max.:
  - Siemens 8DJH 4-field
  - ABB SafePlus/SafeRing 4-field
  - Schneider FBX 4-field
- MV-measurement (single compartment) for 3 current- and 3 voltage instrument transformers

Transformer:

- Distribution transformer max. 800 kVA (SBG)
- Cast-resin transformer max. 400 kVA
- Max. dimensions transformer:
  - L x W x H (top tank) = 1650 x 900 x 1900 mm*
  - *(max. length with 4-field MV-switchgear L=1350 mm)

LV-distribution:

- LV-fuse switch size 3/4a up to 1250 A
- or LV-strip type fuse disconnector 910 A
- or MCCB up to 1250 A
- Max. 14 outgoings
- LV-strip type fusewars or LV-strip type fuse disconnector size 1/2/3
- *Option:
- Additional rooms, e.g. for:
  - Meter boxes
  - Reactive power or fixed compensation
  - Protection / telescontrol equipment

General equipment options:

- Synchronisation, fuses
- Current metering
- Voltage metering
- Multimeters
- Sockets
- Lighting
Schematic view NDV400
(example with MV righthand)
Dimension sheet NDV400
(example with MV righthand)
Excavation plan
NDV400

Thickness of horizontal level concrete-base-plate about 200mm

Soil pressure up to 25 kN/m²
Lifting plan
NDV400

Adjust lifting gear due to centre of gravity
Examples

NDV400
NDV400 with concrete base

Lahmeyer Compactstation®
**NDV400 with concrete base**
is suitable for transformers with:

- **Power**: up to 800 kVA
- **Voltage**: up to 24 kV

**Use:**
Longside operated
Grid-, Customer- or connection substation with several LV- and MV-measurements possible

**Dimensions:**
- **Footprint**: 4.35 m²
- **Area with opened doors**: 6.50 - 8.90 m²
- **L x W x H**: 3010 x 1600 x 2420 mm

**Masses:**
- **Empty housing**: ca. 3510 kg
- **Total**: ca. 6200 kg
  (approx. with DIN-transformer 630kVA and equipment)

**Design:**

**Housing:**
- Housing class = 20K
- Steel sheet, galvanised and powder coated,
- Transformer-compartment accessible by push-in plug,
- lockable doors for MV- and LV-compartment
- Standard colour: Pebble grey (RAL 7032)
- other RAL-colours possible (additional charge),
- Graffiti-protection possible

**Base:**
- With oil collecting pan
- concrete (thickness upper edge: 110mm)
- with Lahmeyer-cable inlets

**Equipment:**

**MV-compartment:**
- SBG HV-fuse-comp. 12/24 kV (air-insulated)
- SF6-insulated MV-switchgears with max.:
  - Siemens 8DJH 4-field
  - ABB SafePlus/SafeRing 4-field
  - Schneider FBX 4-field
- MV-measurement (single compartment) for 3 current- and 3 voltage instrument transformers

**Transformer:**
- Distribution transformer max. 800 kVA (SBG)
- Cast-resin transformer max. 400 kVA
- max. dimensions transformer:
  - L x W x H (top tank) = 1650 x 900 x 1900 mm*
  *(max. length with 4-field MV-switchgear L=1350 mm)

**LV-distribution:**
- LV-fuse switch size 3/4a up to 1250 A
- or LV-strip type fuse disconnector 910 A
- or MCCB up to 1250 A
- max. 14 outgoings
- LV-strip type fuseways or LV-strip type fuse disconnector size 1/2/3
- additional rooms, e.g. for:
  - Meter boxes
  - reactive power or fixed compensation
  - protection / telecontrol equipment

**General equipment options:**
- synchronisation, fuses
- current metering
- voltage metering
- multimeters
- sockets
- lighting

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version: 01/2016
Tel.: +4937600 / 83 253
Subject to technical changes!
Tel.: +4937600 / 83 197
Matrix
NDV400 with concrete base

AR = additional room, e.g. measuring compartment

**Maximum width:**
- MV: max. 1410 mm
- LV: max. 1200 mm
- Transformer: max. 1350 mm

**Maximum width:**
- MV: max. 1210 mm
- LV: max. 1400 mm
- Transformer: max. 1550 mm
NDV400 with concrete base

**Dimension sheet**
**NDV400 with concrete base**
(Example with righthand MV-switchgear)

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**Profile A - B**

- **Cable inlet for site supply**
- **Wall element with vent**
- **Push-in plug**
- **AR** = additional room, e.g. measuring compartment

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*version: 01/2016*
*Subject to technical changes!*
Excavation plan
NDV400 with concrete base

Thickness of horizontal level concrete-base-plate about 200mm
or horizontal level sand bed

Soil pressure up to 90 kN/m²
Lifting plan
NDV400 with concrete base

Adjust lifting gear due to centre of gravity
NDV400 with concrete base

Loading plan
NDV400 with concrete base

- Anti-slip pads
- Trailer
- Restraint
- Trailer lugs

Dimensions:
- Length: 2980 mm
- Width: 2600 mm
- Height: 2050 mm

Subject to technical changes!
Example NDV400 with concrete base without housing

MV-measuring compartment
make: SBG

MV-cable: N2XSY 35RM/16

LV-cable: NSGAFÖU 185mm²

Concrete base

Pfisterer-clamps

Pfisterer-covers

Lifting points / anchors

Detail view
MV-measuring compartment

Voltage transformer (VT)

Current transformer (CT)

MV-cables
NDV400 with concrete base

Detail view
transformer-connections

Example NDV400 with concrete base
with housing

- Door to additional room, e.g. measuring compartment
- Air vents transformer compartment
- Push-in plug transformer compartment
- Cable inlet for site supply
Lahmeyer Compactstation® **NDV1600**
is suitable for transformers with:

| Power      | Voltage | 1600 kVA | 24 kV |

**Use:**
Frontside operated
Grid-, Customer- or connection substation with several LV- and MV-measurements possible

**Dimensions:**
- Footprint: 6.38 m²
- Area with opened doors: 10.60 m²
- L x W x H: 3000 x 2300 x 2340 mm

**Masses:**
- Empty housing: ca. 1500 kg
- Total: ca. 6500 kg
(approx. with DIN-transformer 1600 kVA and equipment)

**Equipment:**

**MV-compartment:**
- SBG HV-fuse-comp. 12/24 kV (air-insulated)
- SF6-insulated MV-switchgears with max.:
  - Siemens 8DJH 5-field
  - ABB SafePlus/SafeRing 5-field
  - Schneider FBX 5-field
- MV-measurement (single compartment) for 3 current- and 3 voltage instrument transformers

**Transformer:**
- Distribution transformer: max. 1600 kVA (SBG)
- Cast-resin transformer: max. 1000 kVA

**LV-distribution:**
- LV-fuse switch size 3/4a: up to 1600 A
- or LV-strip type fuse disconnector: 2000 A
- or MCCB / ACB: up to 2500 A
- max. 20 outgoings
- LV-strip type fuseways or LV-strip type fuse disconnector size 1/2/3
- option:
  - additional rooms, e.g. for:
    - Meter boxes
    - reactive power or fixed compensation
    - protection / telecontrol equipment

**General equipment options:**
- synchronisation, fuses
- current metering
- voltage metering
- multimeters
- sockets
- lighting

**Design:**

**Housing:**
- Housing class (up to 1600 kVA) = 15K
- Steel sheet, galvanised and powder coated, Transformer-compartment accessible by push-in plug,
- lockable doors for MV- and LV-compartment
- Standard colour: Pebble grey (RAL 7032)
- other RAL-colours possible (additional charge), Graffiti-protection possible

**Base:**
- With oil collecting pan
- steel sheet, galvanised and powder coated, with Lahmeyer-cable inlets
Dimension sheet
NDV1600 with two additional rooms

MC = measuring compartment
AC = Additional room
Dimensions and masses NDV1200 to NDV2600

<table>
<thead>
<tr>
<th>Type</th>
<th>Footprint in m² (ca.)</th>
<th>Area with opened doors in m² (ca.)</th>
<th>Empty housing in kg (ca.)</th>
<th>Total mass in kg (ca.)</th>
<th>Approx. with transformer</th>
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<td>6000</td>
<td>1250kVA</td>
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<td>1500</td>
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<td>1600kVA</td>
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<td>NDV 1800</td>
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<td>13.50</td>
<td>1550</td>
<td>8500</td>
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<td>NDV 2500</td>
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<td>8500</td>
<td>2500kVA</td>
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<tr>
<td>NDV 2600</td>
<td>8.00</td>
<td>13.50</td>
<td>1600</td>
<td>8500</td>
<td>2500kVA</td>
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<table>
<thead>
<tr>
<th>Type</th>
<th>L in mm</th>
<th>W in mm</th>
<th>H in mm</th>
</tr>
</thead>
<tbody>
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<td>NDV 1200</td>
<td>3000</td>
<td>2100</td>
<td>2340</td>
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<td>NDV 1600</td>
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<td>2300</td>
<td>2340</td>
</tr>
<tr>
<td>NDV 1800</td>
<td>3284</td>
<td>2300</td>
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</tr>
<tr>
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<tr>
<td>NDV 2600</td>
<td>3284</td>
<td>2300</td>
<td>2640</td>
</tr>
</tbody>
</table>

Equipment NDV1200 - NDV2600:

Transformer:
- Distribution transformer max. 2500 kVA
- Dry-type transformer max. 1000 kVA
- NDV1800 and NDV2600 can be equipped with two transformers max. 1000 kVA.

LV-distribution:
- LV-fuse switch size 3/4a up to 1600 A
- or LV-strip type fuse disconnector 2000 A
- or MCCB up to 4000 A
- max. 20 outgoings
- LV-strip type fuseways or LV-strip type fuse disconnector size 1/2/3

General equipment options:
- synchronisation
- current metering
- voltage metering
- multimeters
- sockets
- lighting
- fuses
- additional rooms, e.g. for:
  - Meter boxes
  - reactive power or fixed compensation
  - protection / telecontrol equipment
Dimension sheet
NDV1200

Top view
Dimension sheet
NDV1800
Dimension sheet
NDV2500
Dimension sheet
NDV2600
Excavation plan
NDV1200 to NDV2600

Thickness of horizontal level concrete-base-plate about 200mm

Soil pressure up to 65 kN/m²

<table>
<thead>
<tr>
<th></th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
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<td>2900</td>
<td>2000</td>
<td>3000</td>
<td>1680</td>
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Contact area min. 2 x 0.48m²
Lifting plan
NDV1200 to NDV2600

Dimensions in mm

<table>
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<tr>
<th></th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
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Loading plan
NDV1200 to NDV2600

Dimensions in mm

<table>
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<tr>
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<td>3284</td>
<td>2300</td>
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</tbody>
</table>

restraint  Anti-slip pads  trailer  restraint  trailer lugs
Example NDV1600

Example NDV2500 with customised colour

Example NDV1600 base with oil collecting pan
Lahmeyer Compactstation® **WPS2500** is suitable for transformers with:

**Power**  
up to 4.0 MVA

**Voltage**  
up to 36 kV

**Use:**

Grid-, Customer- or connection substation with several LV- and MV-measurements possible

**Dimensions:**

**Footprint**  
11.5 m²

**Area with opened doors**  
max. 23.5 m²

**Max. L x W x H**  
4500 x 2500 x 3080 mm

**resp. L x W x H**  
4500 x 2500 x 2880 mm  
(depending on version)

**Weights:**

**Empty housing**  
ca. 2600/3100 kg

**Total**  
ca. 13500 kg  
(approx. with DIN-transformer 3800kVA and equipment)

**Design:**

**Housing:**

Housing class = 5K (3.8MVA-transformer)  
Steel sheet, galvanised and powder coated,  
Transformer-compartment accessible by push-in plug, lockable doors for MV- and LV-compartment  
Standard colour: Pebble grey (RAL 7032)  
other RAL-colours possible (additional charge),  
Graffiti-protection possible

**Base:**

base frame, hot-dip galvanised and powder coated  
with separate oil collecting pan  
with Lahmeyer-cable inlets

**Equipment:**

**MV-compartment:**

SBG  
HV-fuse-comp.  
12/24 kV  
(air-insulated)

SF6-insulated MV-switchgears with max.:

Siemens  
8DJH / 8DJH36  
2 x 4-field

ABB  
SafePlus/SafeRing  
2 x 4-field

Schneider  
FBX  
2 x 4-field

MV-measurement (single compartment) for 3 current- and 3 voltage instrument transformers

**Transformer:**

Distribution transformer  
max. 4000 kVA (SBG)  
Cast-resin transformer  
max. 2000 kVA  
max. dimensions transformer:  
L x W x H (top tank) = 2500 x 2100 x 2200 mm

**LV-distribution:**

LV-fuse switch  
size 3/4a  
up to 1600 A  
or LV-strip type fuse disconnector  
up to 2000 A  
or MCCB / ACB  
up to 5000 A  
max. 18 outgoings  
LV-strip type fuseways or  
LV-strip type fuse disconnector size 1/2/3

**option:**

additional rooms, e.g. for:  
Meter boxes  
reactive power or fixed compensation  
protection / telecontrol equipment

**General equipment options:**

synchronisation, fuses  
current metering  
voltage metering  
multimeters  
sockets  
lighting

---

**SBG Neumark**  
**Ohmstraße 1**  
Germany—08496 Neumark  
**Tel.:** +4937600 / 83 226  
**version:** 01/2016  
Subject to technical changes!
Key:

A) Version 1 - LV-cable inlet longside
E) doors with arretations at 90° and 120°
Dimension sheet
WPS2500 (tall version)

Key:

B) Version 2 - LV-cable inlet from below
C) MV-cable inlet from below
E) doors with arretations at 90° and 120°
F) Detachable puch-in plug (acces transformer)
Dimension sheet
WPS2500 (low-rise version)
Lifting plan
WPS2500 (low-rise version)
Loading plan
WPS2500 (low-rise version)
Examples
WPS2500

WPS2500
## Index of special types

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<td>7</td>
<td>Special substation</td>
<td>NCV207.5</td>
</tr>
</tbody>
</table>
Lahmeyer Compactstation® NBV19.29 can be equipped as supply substation for train climate-conditioning systems

**Equipment:**

**MV-compartment:**
equipped with:
- Siemens Vakuum circuit breaker
- Driescher Earthing switch, 2-pole

**Transformer:**
Single-phase-transformers (hermetic-design) up to max. 1250kVA, 16 2/3 Hz
max. dimensions of the transformer:
L x W x H = 1900 x 1300 x 1900 mm

**LV-distribution:**
up to 10 outgoings
- with 800A-contactors
- with VT and branch CT's
- with overcurrent protection relays

**Control technique:**
Electronic or relays-control

**Use:**
Trackbed-installed electrical supply system for climate-conditioning of train coaches, connection by control columns, with integrated electronic controls

**Dimensions:**
- Footprint: 5.70 m²
- Area with opened doors: max. 14.60 m²
- L x W x H: 3010 x 2100 x 2382 mm

**Weights:**
- Empty housing: ca. 1250 kg
- Total: ca. 8100 kg (approx. with DIN-transformer 1250kVA and equipment)

**Design:**

**Housing:**
Steel sheet, galvanised and powder coated,
lockable doors for transformer-, LV-, control- and MV-compartment
Windows in control- and LV-compartment
Standard colour: Reseda green (RAL 6011)
other RAL-colours possible (additional charge)
With base frame, hot-dip galvanised and powder

**Oil collecting pan:**
Separate, concrete, under ground
Train climate-conditioning system

Dimensions
NBV19.29

Concrete oil pan (underground)

Transformer (max. 1250kVA)

16kV switch-gear

controls

1kV-compartment

Concrete oil pan (underground)
Train climate-conditioning system

Example pictures
NBV19.29
Lahmeyer Compactstation® NCV340/NCV300 can be designed as housing for switchgears and secondary systems or LV-distribution cabinet.

**Voltage** up to 24 kV

**Frequency** 50 Hz

**Use:**

In MV-grids as switchgear-substation at grid junctions or to switch a transformer apart etc., also as housing for secondary systems, distribution panels etc.

**Dimensions NCV340 (NCV300):**

- Footprint: 1.70 (1.50) m²
- Area with opened doors: 2.70 (2.40) m²
- W x D x H: 1750 x 1150 x 2420 mm (1450 x 1150 x 2420 mm)

**Weights NCV340 (NCV300):**

- Empty housing: ca. 480 (390) kg
- Total: ca. 950 (840) kg (NCV340 estimated with 4-field switchgear / NCV300 with 3-field)

**Equipment:**

**as MV-switchgear substation:**

MV-compartment equipped with:

- ABB SafeRing/SafePlus max. 4-field
- Siemens 8DJH max. 4-field

**as secondary system housing:**

e.g. for electronic control systems, measuring and meter boxes, monitoring equipment etc.

**as LV-distribution cabinet**

with LV-distribution panel(s) and smallest dry-type-transformers

**general equipment options:**

- lighting
- hygrostatic heating
- sockets

**Design:**

**Housing:**

Steel sheet, galvanised and powder coated lockable doors

Standard colour: pebble grey (RAL 7032)

other RAL-colours possible (additional charge)

with Lahmeyer-cable-inlets

For extraordinary cramped conditions, the narrower housing NCV300 is usable.
Switchgear & distributing CS NCV340/300
Lahmeyer Compactstations® can be mounted on cinqed or cinqed and painted vats for strip-mines, building sites etc.
Lahmeyer Compactstations® can be mounted on custom-made trailers for emergency-stash, festival supply, building sites etc.
Lahmeyer Compactstations® can be equipped as customised substation for low-resistance neutral earthing:

**Use:**
System for low-resistance neutral earthing, to allow earth-fault-detection in MV-grids

**Design:**

**Housing:**
Applying standard types of Lahmeyer Compactstations® as LCS-E.7, NDV400, NDV1600 etc., optimised by required space

**Equipment:**

**Neutral point connection (example):**
- Nominal power: 5000 kvar
- Nominal voltage: 24 kV
- Nominal current: 433 A

**Resistance (Example):**
- NP-resistance: 30 kV
- Starting current: 1200 A
- Duty cycle: 3.0 s
- Max. temperature rise: 750 K
- Resistance value: 18.0 Ohm (in 1.0 Ohm-steps switchable)

**General equipment options:**
- 2 CT's 300/1A for protection relays
- 2 heatings in resistance compartment
Lahmeyer Compactstations® can be equipped as customised substation for temporary low-resistance neutral earthing:

Voltage: up to 20 kV
Frequency: 50, 16 2/3 Hz

Use:
System for temporary low-resistance neutral earthing, to allow MV-grid-earth-fault-detection

Dimensions:
Footprint: 1.41 m²
Area with opened doors: 2.30 m²
W x D x H: 1450 x 1150 x 2420 mm

Masses:
Empty housing: ca. 670 kg
Total: ca. 1100 kg (approx. with equipment)

Design:
Housing:
Steel sheet, galvanised and powder coated, lockable doors
Standard colour: Pebble grey (RAL 7032)
other RAL-colours possible (additional charge),

Equipment:
MV-compartment:
equipped with:
Siemens Vakuum-Circuit breaker, 1-pole type 3AH5 with motor
Nominal voltage: 24 kV
Nominal current: 800 A
Short circuit current: 16 kA

Resistance:
NP-resistance
System voltage: 20 kV
Starting current: 2000 A
Duty cycle: 0.5 s
Idle time: <10 min (after 100% load)
Resistance value: 6.0 Ohm (in 1.0 Ohm-steps switchable)

General equipment options:
1 current transformer 1000/1A
2 heatings in resistance compartment
1 heating in control compartment
Special substation NCV207.5

Lahmeyer Compactstation® NCV207.5 is suitable for transformer with parameters:

- **Power** up to 630 kVA
- **Voltage** 12 kV and 24 kV

**Use:**
- Grid-, Customer- or connection substation

**Dimensions:**
- **Footprint** 2.80 m²
- **Area with opened doors** 5.40 m²
- **L x W x H** 2374 x 1370 x 2208 mm

**Weights:**
- **Empty housing** ca. 710 kg
- **Total** ca. 3200 kg (approx. with DIN-transformer 630kVA and equipment)

**Equipment:**

**MV-compartment:**
- SF6-insulated MV-switchgear max.:
  - Siemens 8DJH 3-field

**Transformer:**
- Distribution transformer max. 800kVA (SGB)
- Cast-resin transformer max. 400kVA
- **max. dimensions transformer:**
  - L x W x H = 1240 x 840 x 1440 mm

**LV-distribution:**
- LV-fuse switch 630 / 1250 A
- or LV-strip type fuse disconnector 910 A
- or MCCB up to 1250 A
- **max. 9 outgoings**
- LV-strip type fuseways or
- LV-strip type fuse disconnector size 1/2/3

**General equipment options:**
- synchronisation, fuses
- current metering
- voltage metering
- multimeters
- lighting
- sockets
- earthing equipment

**Design:**

**Housing:**
- Steel sheet, galvanised and powder coated,
- Transformer-compartment accessible by push-in plug, lockable doors for MV- and LV-compartment
- Standard colour: Pebble grey (RAL 7032)
- other RAL-colours possible (additional charge), Graffiti-protection possible

**Base:**
- with integrated oil collecting pan
- Steel sheet, hot-dip galvanised and double powder coated
- suitable for Hauff-gaskets, e.g. type HSI 150
Special substation NCV207.5

Front view
NCV207.5

Top view
NCV207.5

Side view
NCV207.5

Cable inlet for site power supply
Rental substations

**Lahmeyer Compactstations®** are available to hire for negotiable time periods.

**Assortment:**
- Compactstations in stock
- Customised manufactured
- Hire-purchase (after rental period)

**Available substation types:**
- LCS-E, also on trailer
- NDV400
- NDV1200 - NDV2600
- WPS2500
- Special types

All information to these substations can be found in the corresponding chapters.

**Characteristics:**
- Short-term availability
- Aplicable for ground-level installation
- Remarkable versatility
- Small footprint
- IAC-tested

**Field of application:**
- Site power supply
- Emergency supply, in case of failure to avoid consequential damages and costs
- To bypass delivery times
- Long-time-hire to avoid high investment costs

**Rental costs:**

<table>
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<tr>
<th>Rental period</th>
<th>Price per day*</th>
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<tbody>
<tr>
<td>1 day</td>
<td>starting 23.00€</td>
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<tr>
<td>starting 1 month</td>
<td>starting 20.00€</td>
</tr>
<tr>
<td>starting 1 year</td>
<td>starting 14.00€</td>
</tr>
<tr>
<td>starting 3 years</td>
<td>starting 12.50€</td>
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</table>

* All prices as hire per day (net)
* Price plus logistics
Rental substations

e.g. LCS-E.7

e.g. NDV400

e.g. LCS-E.7 on trailer
Lahmeyer-Compactstations®, especially types NDV400, NDV1200-2600 and WPS2500, are ideally suited for connection of renewable energy generating facilities, such as wind turbines, photovoltaic installations or natural gas plants.

Our Compactstations can be equipped as transformer substation or grid-connection point, with several metering units, telemetric or telecontrol devices, parc controls, reactive power compensation etc.

Example - WPS2500 for wind power stations
Transformer power up to 4.0MVA at 36.0kV
(picture with storm protection of vents, for exposed areas)
Example - NDV2500 with 3 additional compartments

f.i. usable for a natural gas plant with three metered LV-distribution panels and meter boxes

MC = measuring compartment
AC = Additional room
Example - LV-distribution panel NDV400

- NH fuse-switch disconnector
- Current transformers on lugs
- Terminal block, fuses, instruments

Example - LV-distribution panel NDV1600

- NH fuse-switch-disconnector
- Lugs for current transformer
- NH strip-type fuse-switch-disconnectors (3 LV-panels)
Example - LV-distribution panel NDV1600

- Testing socket E7/4.1
- Terminal block, fuses, instruments
- Lugs for current transformer
- NH strip-fuseways

Example - LV-distribution panel NDV1600

- Meter boxes
- NH strip-type fuse-switch-disconnectors
- NH fuse-switch-disconnector
Example - LV-distribution panel NDV2500

- 4000A-MCCB (moulded case circuit breaker)
  - make: Schneider Electric
- Over-/under-voltage/-frequency protection relay
- UPS (for protection relay)
Example - LV-distribution panel NDV2500

MCCB (moulded case circuit breaker)
make: ABB

Additional compartments
(doors on longside of substation)
Example - LV-distribution panel NDV2500
for isolated operation facilities (island mode) in case of lacking grid voltage,
with automatic mode switch
The Lahmeyer MV-measuring compartment provides

- Low price
- Safety
- Proven IAC-test in accordance to IEC 62271-200:2011 type A, 20kA (1s)

Use:

- For mounting of MV-current- and MV-voltage-transformers up to 20kV, acc. to DIN 42600 – 8/9 (also big size)
- Use in existing facilities
- Use in Lahmeyer Compactstations® (IAC-tested in acc. to IEC 62271-202:2011 type AB)

Available:

- As empty compartment
- Equipped with customer-supplied CT's/VT's
- Prepared for later mounting of CT's/VT's
- Completed, incl. CT's/VT's

Dimensions:

W x D x H = 900 x 600 x 1400 mm

Empty weight:

approx. 130 kg
**SBG Neumark** provides following types of oil collecting pans:

### Closed versions:

- TOA-G 03
- TOA-G 04

### Longside-openable versions:

- TOA-OL 01
- TOA-OL 02
- TOA-OL 03
- TOA-OL 04
- TOA-OL 05

### Frontside-openable versions:

- TOA-OS 01
- TOA-OS 02
- TOA-OS 03
- TOA-OS 04
- TOA-OS 05
Hot-dip galvanised oil collecting pan type TOA-G 03, design-no. 218 5553, closed version, suitable for retrofit of transformers in substations without oil-tight pan or basement. The OCPs apply to all regulations of the water regime law of the Federal Republic of Germany to protect the environment.

**Features:**
- oil-tight
- resistant against transformer oil
- made of S235JR-material, hot-dip galvanised, material thickness 4mm
- resistant against corrosion (hot-dip galvanised)
- Tightness-, design- and construction-test
- verified welding quality (fabrication by qualified welders)
- hot-dip galvanised mounting rails for transformers

**Design:**
The hot-dip galvanised OCPs of series TOA-G have all-around fixed (closed) sidewalls. The also hot-dip galvanised U-profile mounting rails are designed for crossways mounting. They are delivered loose and can be adjusted according to the track width of the transformer wheels or leg irons.

**Dimensions:**
- Length mm 1700
- Width mm 1000
- Height mm 400
- Mass kg 161
- Volume dm³ 650

**Remark:**
Empty mass, with mounting rails.
Volume with 10% safety factor, transformer not included.
Hot-dip galvanised oil collecting pan type TOA-G 04, design-no. 218 5561, closed version, suitable for retrofit of transformers in substations without oil-tight pan or basement. The OCPs apply to all regulations of the water regime law of the Federal Republic of Germany to protect the environment.

**Features:**
- oil-tight
- resistant against transformer oil
- made of S235JR-material, hot-dip galvanised, material thickness 4mm
- resistant against corrosion (hot-dip galvanised)
- Tightness-, design- and construction-test
- verified welding quality (fabrication by qualified welders)
- hot-dip galvanised mounting rails for transformers

**Design:**
The hot-dip galvanised OCPs of series TOA-G have all-around fixed (closed) sidewalls. The also hot-dip galvanised U-profile mounting rails are designed for crossways mounting. They are delivered loose and can be adjusted according to the track width of the transformer wheels or leg irons.

**Dimensions:**
- Length mm 1900
- Width mm 1100
- Height mm 400
- Mass kg 238
- Volume dm³ 800

**Remark:**
Empty mass, with mounting rails.
Volume with 10% safety factor, transformer not included.
Hot-dip galvanised oil collecting pan type TOA-OL 01, design-no. 218 5613, longside-openable version, suitable for retrofit of transformers in substations without oil-tight pan or basement. The OCPs apply to all regulations of the water regime law of the Federal Republic of Germany to protect the environment.

Features:
- oil-tight
- resistant against transformer oil
- made of S235JR-material, hot-dip galvanised, material thickness 4mm
- resistant against corrosion (hot-dip galvanised)
- Tightness-, design- and construction-test
- verified welding quality (fabrication by qualified welders)
- hot-dip galvanised mounting rails for transformers

Design:
The hot-dip galvanised OCPs of series TOA-OL have three fixed (closed) sidewalls and one detachable long side element. This is equipped with an oil-proof gasket and screwed. The bottom sealing edge of the detachable wall element and the tread of the mounting rails are 50mm above ground. The also hot-dip galvanised U-profile mounting rails are designed for crossways mounting. They are delivered loose and can be adjusted according to the track width of the transformer wheels or leg irons.

Dimensions:
- Length mm 1300
- Width mm 900
- Height mm 300
- Mass kg 123
- Volume dm³ 330

Remark:
Empty mass, with mounting rails.
Volume with 10% safety factor, transformer not included.
Hot-dip galvanised oil collecting pan type TOA-OL 02, design-no. 218 5620, longside-openable version, suitable for retrofit of transformers in substations without oil-tight pan or basement. The OCPs apply to all regulations of the water regime law of the Federal Republic of Germany to protect the environment.

Features:
- oil-tight
- resistant against transformer oil
- made of S235JR-material, hot-dip galvanised, material thickness 4mm
- resistant against corrosion (hot-dip galvanised)
- Tightness-, design- and construction-test
- verified welding quality (fabrication by qualified welders)
- hot-dip galvanised mounting rails for transformers

Design:
The hot-dip galvanised OCPs of series TOA-OL have three fixed (closed) sidewalls and one detachable long side element. This is equipped with an oil-proof gasket and screwed. The bottom sealing edge of the detachable wall element and the tread of the mounting rails are 50mm above ground. The also hot-dip galvanised U-profile mounting rails are designed for crossways mounting. They are delivered loose and can be adjusted according to the track width of the transformer wheels or leg irons.

Dimensions:

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<table>
<thead>
<tr>
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<tbody>
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<tr>
<td>Width</td>
<td>mm 1000</td>
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<tr>
<td>Height</td>
<td>mm 300</td>
</tr>
<tr>
<td>Mass</td>
<td>kg 143</td>
</tr>
<tr>
<td>Volume</td>
<td>dm³ 450</td>
</tr>
</tbody>
</table>

Remark:
Empty mass, with mounting rails.
Volume with 10% safety factor, transformer not included.
Hot-dip galvanised oil collecting pan type TOA-OL 03, design-no. 218 5638, longside-openable version, suitable for retrofit of transformers in substations without oil-tight pan or basement. The OCPs apply to all regulations of the water regime law of the Federal Republic of Germany to protect the environment.

Features:
- oil-tight
- resistant against transformer oil
- made of S235JR-material, hot-dip galvanised, material thickness 4mm
- resistant against corrosion (hot-dip galvanised)
- Tightness-, design- and construction-test
- verified welding quality (fabrication by qualified welders)
- hot-dip galvanised mounting rails for transformers

Design:
The hot-dip galvanised OCPs of series TOA-OL have three fixed (closed) sidewalls and one detachable long side element. This is equipped with an oil-proof gasket and screwed. The bottom sealing edge of the detachable wall element and the tread of the mounting rails are 50mm above ground. The also hot-dip galvanised U-profile mounting rails are designed for crossways mounting. They are delivered loose and can be adjusted according to the track width of the transformer wheels or leg irons.

Dimensions:
- Length mm 1700
- Width mm 1000
- Height mm 400
- Mass kg 169
- Volume dm³ 650

Remark:
Empty mass, with mounting rails.
Volume with 10% safety factor, transformer not included.
Hot-dip galvanised oil collecting pan type TOA-OL 04, design-no. 218 5645, longside-openable version, suitable for retrofit of transformers in substations without oil-tight pan or basement. The OCPs apply to all regulations of the water regime law of the Federal Republic of Germany to protect the environment.

Features:
- oil-tight
- resistant against transformer oil
- made of S235JR-material, hot-dip galvanised, material thickness 4mm
- resistant against corrosion (hot-dip galvanised)
- Tightness-, design- and construction-test
- verified welding quality (fabrication by qualified welders)
- hot-dip galvanised mounting rails for transformers

Design:
The hot-dip galvanised OCPs of series TOA-OL have three fixed (closed) sidewalls and one detachable long side element. This is equipped with an oil-proof gasket and screwed. The bottom sealing edge of the detachable wall element and the tread of the mounting rails are 50mm above ground. The also hot-dip galvanised U-profile mounting rails are designed for crossways mounting. They are delivered loose and can be adjusted according to the track width of the transformer wheels or leg irons.

Dimensions:
- Length mm 1900
- Width mm 1100
- Height mm 400
- Mass kg 202
- Volume dm³ 800

Remark:
Empty mass, with mounting rails.
Volume with 10% safety factor, transformer not included.
Hot-dip galvanised oil collecting pan type TOA-OL 05, design-no. 268 1184, longside-openable version, suitable for retrofit of transformers in substations without oil-tight pan or basement. The OCPs apply to all regulations of the water regime law of the Federal Republic of Germany to protect the environment.

Features:
- oil-tight
- resistant against transformer oil
- made of S235JR-material, hot-dip galvanised, material thickness 4mm
- resistant against corrosion (hot-dip galvanised)
- Tightness-, design- and construction-test
- verified welding quality (fabrication by qualified welders)
- hot-dip galvanised mounting rails for transformers

Design:
The hot-dip galvanised OCPs of series TOA-OL have three fixed (closed) sidewalls and one detachable long side element. This is equipped with an oil-proof gasket and screwed. The bottom sealing edge of the detachable wall element and the tread of the mounting rails are 50mm above ground. The also hot-dip galvanised U-profile mounting rails are designed for crossways mounting. They are delivered loose and can be adjusted according to the track width of the transformer wheels or leg irons.

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Remark:
Empty mass, with mounting rails.
Volume with 10% safety factor, transformer not included.
Hot-dip galvanised oil collecting pan type TOA-OS 01, design-no. 218 5578, frontside-openable version, suitable for retrofit of transformers in substations without oil-tight pan or basement. The OCPs apply to all regulations of the water regime law of the Federal Republic of Germany to protect the environment.

Features:
- oil-tight
- resistant against transformer oil
- made of S235JR-material, hot-dip galvanised, material thickness 4mm
- resistant against corrosion (hot-dip galvanised)
- Tightness-, design- and construction-test
- verified welding quality (fabrication by qualified welders)
- hot-dip galvanised mounting rails for transformers

Design:
The hot-dip galvanised OCPs of series TOA-OS have three fixed (closed) sidewalls and one detachable front side element. This is equipped with an oil-proof gasket and screwed. The bottom sealing edge of the detachable wall element and the tread of the mounting rails are 50mm above ground. The also hot-dip galvanised U-profile mounting rails are designed for crossways mounting. They are delivered loose and can be adjusted according to the track width of the transformer wheels or leg irons.

Dimensions:
- Length mm 1300
- Width mm 900
- Height mm 300
- Mass kg 133
- Volume dm³ 330

Remark:
Empty mass, with mounting rails.
Volume with 10% safety factor, transformer not included.
Hot-dip galvanised oil collecting pan type TOA-OS 02, design-no. 218 5586, frontside-openable version, suitable for retrofit of transformers in substations without oil-tight pan or basement. The OCPs apply to all regulations of the water regime law of the Federal Republic of Germany to protect the environment.

Features:
- oil-tight
- resistant against transformer oil
- made of S235JR-material, hot-dip galvanised, material thickness 4mm
- resistant against corrosion (hot-dip galvanised)
- Tightness-, design- and construction-test
- verified welding quality (fabrication by qualified welders)
- hot-dip galvanised mounting rails for transformers

Design:
The hot-dip galvanised OCPs of series TOA-OS have three fixed (closed) sidewalls and one detachable front side element. This is equipped with an oil-proof gasket and screwed. The bottom sealing edge of the detachable wall element and the tread of the mounting rails are 50mm above ground. The also hot-dip galvanised U-profile mounting rails are designed for crossways mounting. They are delivered loose and can be adjusted according to the track width of the transformer wheels or leg irons.

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Remark:
Empty mass, with mounting rails.
Volume with 10% safety factor, transformer not included.
Hot-dip galvanised oil collecting pan type TOA-OS 03, design-no. 218 5593, frontside-openable version, suitable for retrofit of transformers in substations without oil-tight pan or basement. The OCPs apply to all regulations of the water regime law of the Federal Republic of Germany to protect the environment.

Features:
- oil-tight
- resistant against transformer oil
- made of S235JR-material, hot-dip galvanised, material thickness 4mm
- resistant against corrosion (hot-dip galvanised)
- Tightness-, design- and construction-test
- verified welding quality (fabrication by qualified welders)
- hot-dip galvanised mounting rails for transformers

Design:
The hot-dip galvanised OCPs of series TOA-OS have three fixed (closed) sidewalls and one detachable front side element. This is equipped with an oil-proof gasket and screwed. The bottom sealing edge of the detachable wall element and the tread of the mounting rails are 50mm above ground. The also hot-dip galvanised U-profile mounting rails are designed for crossways mounting. They are delivered loose and can be adjusted according to the track width of the transformer wheels or leg irons.

Dimensions:
- Length mm 1700
- Width mm 1000
- Height mm 400
- Mass kg 180
- Volume dm³ 650

Remark:
Empty mass, with mounting rails.
Volume with 10% safety factor, transformer not included.
Hot-dip galvanised oil collecting pan type TOA-OS 04, design-no. 218 5605, frontside-openable version, suitable for retrofit of transformers in substations without oil-tight pan or basement. The OCPs apply to all regulations of the water regime law of the Federal Republic of Germany to protect the environment.

Features:
- oil-tight
- resistant against transformer oil
- made of S235JR-material, hot-dip galvanised, material thickness 4mm
- resistant against corrosion (hot-dip galvanised)
- Tightness-, design- and construction-test
- verified welding quality (fabrication by qualified welders)
- hot-dip galvanised mounting rails for transformers

Design:
The hot-dip galvanised OCPs of series TOA-OS have three fixed (closed) sidewalls and one detachable front side element. This is equipped with an oil-proof gasket and screwed. The bottom sealing edge of the detachable wall element and the tread of the mounting rails are 50mm above ground. The also hot-dip galvanised U-profile mounting rails are designed for crossways mounting. They are delivered loose and can be adjusted according to the track width of the transformer wheels or leg irons.

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Remark:
Empty mass, with mounting rails.
Volume with 10% safety factor, transformer not included.
Hot-dip galvanised oil collecting pan type TOA-OS 05, design-no. 267 7922, frontside-openable version, suitable for retrofit of transformers in substations without oil-tight pan or basement. The OCPs apply to all regulations of the water regime law of the Federal Republic of Germany to protect the environment.

Features:
- oil-tight
- resistant against transformer oil
- made of S235JR-material, hot-dip galvanised, material thickness 4mm
- resistant against corrosion (hot-dip galvanised)
- Tightness-, design- and construction-test
- verified welding quality (fabrication by qualified welders)
- hot-dip galvanised mounting rails for transformers

Design:
The hot-dip galvanised OCPs of series TOA-OS have three fixed (closed) sidewalls and one detachable front side element. This is equipped with an oil-proof gasket and screwed. The bottom sealing edge of the detachable wall element and the tread of the mounting rails are 50mm above ground. The also hot-dip galvanised U-profile mounting rails are designed for crossways mounting. They are delivered loose and can be adjusted according to the track width of the transformer wheels or leg irons.

Dimensions:
- Length mm 2200
- Width mm 1300
- Height mm 400
- Mass kg 247
- Volume dm³ 1000

Remark:
Empty mass, with mounting rails.
Volume with 10% safety factor, transformer not included.
REFERENCE LIST

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Sächsisch-Bayerische Starkstrom-Gerätebau GmbH

VOLTAGE: FOR ALL PURPOSES:

12 kV Grid / Utility
24 kV Industry
36 kV Renewable Energy

Special solutions (mobile substations on trailer, roof mounting etc.)

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- Stadtwerke Unna GmbH, Unna
- Stadtwerke Würzburg AG, Würzburg
- Starkstromanlagenbau Lobenstein eG, Bad Lobenstein
- Strom und Gasversorgung, Versmold
- SÜC Energie und H2O GmbH, Coburg
- SWT Stadtwerke Trier, Trier
- Syna GmbH, Frankfurt
- Taminco Germany GmbH, Leuna
- Technische Werke, Delitzsch
- Tittel-Group GmbH, Schmölln
- Volz Elektrotechnik GmbH, Mannheim
- Wagner Schaltanlagen GmbH, Staudt
- Walter Energy GmbH & Co KG, Jagstzell
- Waresa Bau GmbH, Nordhausen
- Wirth Elektrotechnik GmbH, Dischingen
- WSW Energie- und Wasser AG, Wuppertal
- Zollfrank, Herzogenaurach

Finland
- FinnGTL Oy, Kouvalo

Italy
- E-Werk Lüsen, Lüsen
- Energie Werk Prad am Stilfserjoch, Prad
- Energiegenossenschaft Villnöss, Villnöss
- Sonderbetrieb Gemeindewerke Schlanders, Schlanders
- Sonderbetrieb Gemeindewerke Latsch, Latsch

Jordan
- El Concorde Construction Ltd., Amman

Luxembourg
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