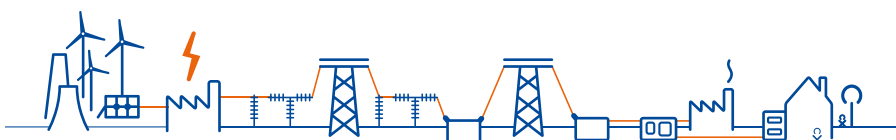


# CAST RESIN TRANSFORMERS



# SGB-SMIT AT A GLANCE

Combined, more than

# 415



## YEARS OF EXPERIENCE

Basis for know-how and  
for know-why

More than

# 2,000



## EMPLOYEES

take care of  
your project

In more than

# 80



## COUNTRIES

satisfied  
customers



## READY FOR YOUR MARKET

The SGB-SMIT Group manufactures transformers for applications worldwide. Sales and service centers on all continents ensure optimum processes.

Our products meet the requirements in accordance with the applicable national standards.



## PRODUCTS

- large power transformers
- medium power transformers
- large liquid-cooled distribution transformers
- liquid-cooled distribution transformers
- cast resin transformers
- shunt reactors
- series reactors
- phase shifters
- Lahmeyer-Compactstationen®

Transformers from 50 kVA up to incl. 1,200 MVA in the voltage range up to 765 kV.



## QUALITY MANAGEMENT

The SGB-SMIT Group is certified in accordance with:

- DIN ISO 9001
- DIN ISO 14001
- DIN ISO 50001
- OHSAS 18001



## TECHNOLOGIES

Technologies for conventional and  
renewable energy.

# ECONOMICALLY EFFICIENT AND CUSTOMER-DRIVEN

Gravity Line by SGB-SMIT comprises various models and power categories of cast resin transformers which can be used for a wide variety of standard applications while completing our standard range for generic applications in the energy distribution sector in a cost-effective way.



## THE PRINCIPLE

The Gravity Line benefits from a new, especially efficient winding system which allows us to pass on the cost advantages derived from manufacture to you directly. At the same time, thanks to features such as the completely vacuum-encapsulated high voltage winding, you can rely on the proven SGB quality and superior operation.

Gravity Line was designed according to the ECO-Design directives (acc. to EU 2009/125/CE) from regulation no. 548/2014 (level 1 and level 2). With Gravity Line, we offer you convincing standard solutions which excel thanks to their short lead times and immediate design availability.



### SPECIAL FEATURE

We constantly keep a complete range of transformers from Gravity Line in stock for you. Additional models can be produced and delivered at short notice.

## THE ADVANTAGES

“From design directly to manufacture:” Short routes in development, efficient production methods and standardized specifications enable us to offer you Gravity Line as an especially cost effective transformer solution. Nevertheless, individual solutions are possible here as well:

The additional heating due to operation when encountering inharmonic overloading situations was taken into consideration when designing this transformer series in regards to the thermodynamic dimensioning of the “Standard Converter Operation DIN EN 61378-1 [4.2]”. Various enclosure combinations and accessories are available to optimize your transformer specifically for its application. Upon consultation, technical adaptations of electrical and mechanical parameters and special designs are also possible. Your contact person will be pleased to explain to you all the advantages of Gravity Line!



### SPECIAL FEATURE

Despite all standardization: with Gravity Line, you will receive the specialist support you are accustomed to, from planning right through to interface clarification.

# TECHNICAL PARAMETERS AT A GLANCE



## TECHNICAL DATA

- Design acc. to DIN EN 60076-11 or 50588-1
- Transformer also designed for "converter-operation" under typical conditions acc. DIN EN 61378-1 [4.2]
- HV-winding with smooth, dirt-repellent surface, vacuum-encapsulated to form a compact cylinder (100 K)
- LV-winding "baked" together to form a compact cylindrical body (100 K)
- Surge-proof and short-circuit proof, free from partial discharge (< 10 pC acc. to IEC 60076-11)
- Insulating level F
- Flame-resistant, self-extinguishing (fire classification F1)
- Climate class C2 (ready for operation in the range from -25°C to +40°C)
- Environmental class E2
- Winding material: Aluminum
- High-voltage taps:
  - +/-2 x 2.5 % (can be changed over in no-load condition)
- Insulation level (LI) standard according to List 2
- Color: core in RAL 7045; windings in RAL 8017
- Suitable for operation at altitudes up to <math>\leq 1000</math> m above sea level
- Steel clamps and running gear galvanized
- Incl. the following technical equipment:
  - 1 set of castors (lockable in longitudinal and transverse direction)
  - Lifting lugs
  - Earth studs (M12)
  - HT tapings
  - Temperature sensor (PT100/3L in LV winding) routed to terminal strip
  - Second rating plate and vector group diagram
- Documentation:
  - 3D dimension drawing, vector group diagram, terminal arrangement diagram
  - Test report regarding routine tests acc. to IEC 60076-11
  - Documentation of accessories acc. to manufacturers' specifications



## GRAVITY LINE ACC. TO ECO LEVEL 1

Type	Power kVA	HV kV	LV kV	$u_k$ %	Vector group	$P_o$ W	$P_k$ 120°C W	$L_{WA}$ dB [A]	Length approx. mm	Width approx. mm	Height approx. mm	Weight approx. kg
DTTHYZ1N 250/10	250	12	0,38 - 0,45	6	DynX	520	3800	57	1170	670	1495	1010
DTTHZ1N 250/10	250	12	0,38 - 0,45	4	DynX	520	3800	57	1105	670	1520	1070
DTTHYZ1N 400/10	400	12	0,38 - 0,45	6	DynX	750	5500	60	1275	820	1680	1450
DTTHZ1N 400/10	400	12	0,38 - 0,45	4	DynX	750	5500	60	1180	820	1770	1470
DTTHYZ1N 630/10	630	12	0,38 - 0,45	6	DynX	1100	7600	62	1390	820	1860	2030
DTTHZ1N 630/10	630	12	0,38 - 0,45	4	DynX	1100	7600	62	1340	820	1750	2025
DTTHZ1N 800/10	800	12	0,38 - 0,45	6	DynX	1300	8000	64	1455	820	1860	2255
DTTHZ1N 1000/10	1000	12	0,38 - 0,45	6	DynX	1550	9000	65	1560	980	1985	2925
DTTHZ1N 1250/10	1250	12	0,38 - 0,45	6	DynX	1800	11000	67	1600	980	2000	2905
DTTHZ1N 250/20	250	24	0,38 - 0,45	6	DynX	520	3800	57	1325	670	1825	1465
DTTHXZ1N 250/20	250	24	0,38 - 0,45	4	DynX	520	3800	57	1290	670	1910	1780
DTTHZ1N 400/20	400	24	0,38 - 0,45	6	DynX	750	5500	60	1360	820	1850	1630
DTTHXZ1N 400/20	400	24	0,38 - 0,45	4	DynX	750	5500	60	1330	820	2030	2080
DTTHZ1N 630/20	630	24	0,38 - 0,45	6	DynX	1100	7600	62	1470	820	1840	2075
DTTHXZ1N 630/20	630	24	0,38 - 0,45	4	DynX	1100	7600	62	1470	820	2275	3010
DTTHZ1N 800/20	800	24	0,38 - 0,45	6	DynX	1300	8000	64	1535	820	1980	2590
DTTHZ1N 1000/20	1000	24	0,38 - 0,45	6	DynX	1550	9000	65	1610	980	2170	3210
DTTHZ1N 1250/20	1250	24	0,38 - 0,45	6	DynX	1800	11000	67	1725	980	2210	3995
DTTHZ1N 1600/20	1600	24	0,38 - 0,45	6	DynX	2200	13000	68	1820	980	2350	4690
DTTHZ1N 2000/20	2000	24	0,38 - 0,45	6	DynX	2600	16000	70	1905	1270	2410	5255

## GRAVITY LINE ACC. TO ECO LEVEL 2 (MANDATORY AS OF 1 JULY 2021, AVAILABLE AS OF NOW)

Type	Power kVA	HV kV	LV kV	$u_k$ %	Vector group	$P_o$ W	$P_k$ 120°C W	$L_{WA}$ dB [A]	Length approx. mm	Width approx. mm	Height approx. mm	Weight approx. kg
DTTHYZ2N 250/10	250	12	0,38 - 0,45	6	DynX	468	3400	56	1250	670	1560	1160
DTTHZ2N 250/10	250	12	0,38 - 0,45	4	DynX	468	3400	56	1180	670	1580	1230
DTTHYZ2N 400/10	400	12	0,38 - 0,45	6	DynX	675	4500	59	1370	820	1750	1670
DTTHZ2N 400/10	400	12	0,38 - 0,45	4	DynX	675	4500	59	1260	820	1840	1690
DTTHYZ2N 630/10	630	12	0,38 - 0,45	6	DynX	990	7100	61	1490	820	1930	2335
DTTHZ2N 630/10	630	12	0,38 - 0,45	4	DynX	990	7100	61	1430	820	1580	2330
DTTHZ2N 800/10	800	12	0,38 - 0,45	6	DynX	1170	8000	63	1560	820	1930	2595
DTTHZ2N 1000/10	1000	12	0,38 - 0,45	6	DynX	1395	9000	64	1670	980	2060	3365
DTTHZ2N 1250/10	1250	12	0,38 - 0,45	6	DynX	1620	11000	66	1750	980	2110	3650
DTTHZ2N 250/20	250	24	0,38 - 0,45	6	DynX	468	3400	56	1420	670	1900	1685
DTTHXZ2N 250/20	250	24	0,38 - 0,45	4	DynX	468	3400	56	1380	670	1900	2050
DTTHZ2N 400/20	400	24	0,38 - 0,45	6	DynX	675	4500	59	1460	820	1920	1875
DTTHXZ2N 400/20	400	24	0,38 - 0,45	4	DynX	675	4500	59	1420	820	2110	2395
DTTHZ2N 630/20	630	24	0,38 - 0,45	6	DynX	990	7100	61	1570	820	1910	2385
DTTHXZ2N 630/20	630	24	0,38 - 0,45	4	DynX	990	7100	61	1570	820	2370	3460
DTTHZ2N 800/20	800	24	0,38 - 0,45	6	DynX	1170	8000	63	1640	820	2060	2980
DTTHZ2N 1000/20	1000	24	0,38 - 0,45	6	DynX	1395	9000	64	1720	980	2260	3690
DTTHZ2N 1250/20	1250	24	0,38 - 0,45	6	DynX	1620	11000	66	1850	980	2300	4595
DTTHZ2N 1600/20	1600	24	0,38 - 0,45	6	DynX	1980	13000	67	1950	980	2450	5395
DTTHZ2N 2000/20	2000	24	0,38 - 0,45	6	DynX	2340	16000	69	2050	1270	2510	6045

# ENCLOSURES



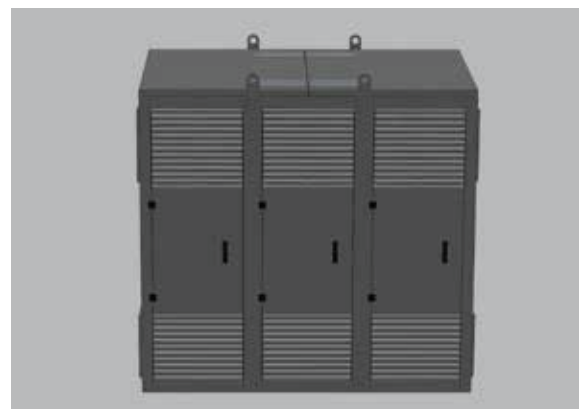
## Gravity Line – enclosure combination at $U_m$ 12 kV

kVA at $U_m$ 12 kV	Type of enclosure	Housing size L X B X H mm	Weight kg	Recommended housing size
250	<math>\leq</math> IP23	1700 x 1100 x 1750	220	1
400	<math>\leq</math> IP23	1800 x 1200 x 2050	240	2
630	<math>\leq</math> IP23	1800 x 1200 x 2050	240	2
800	<math>\leq</math> IP23	1800 x 1200 x 2050	240	2
1000	<math>\leq</math> IP23	2000 x 1300 x 2350	280	3
1250	<math>\leq</math> IP23	2400 x 1400 x 2450	330	4

- Recommended transformer/housing combination up to IP23 without loss of efficiency
- Suitable for AF mode (capacity 140 %)
- Suitable for indoor / floor installation
- Professional service and expert consultation
- Enhanced degree of protection up to IP5X and poke protection on demand
- Outdoor installation and PEHLA protective housing on demand

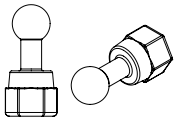
## Gravity Line – enclosure combination at $U_m$ 24 kV

kVA at $U_m$ 24 kV	Type of enclosure	Housing size L X B X H mm	Weight kg	Recommended housing size
250	<math>\leq</math> IP23	1800 x 1200 x 2050	240	2
400	<math>\leq</math> IP23	1800 x 1200 x 2050	240	2
630	<math>\leq</math> IP23	2000 x 1300 x 2350	280	3
800	<math>\leq</math> IP23	2000 x 1300 x 2350	280	3
1000	<math>\leq</math> IP23	2000 x 1300 x 2350	280	3
1250	<math>\leq</math> IP23	2400 x 1400 x 2450	330	4
1600	<math>\leq</math> IP23	2400 x 1400 x 2450	330	4
2000	<math>\leq</math> IP23	2700 x 1600 x 2700	380	5



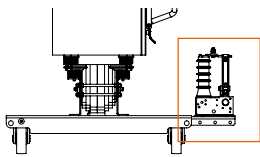
# OPTIONS

## Fixed ball points



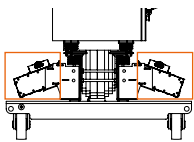
- Internal thread M12, straight model
- Fixed ball point diameter 20 mm or 25 mm
- On HV and LV side

## Earthing switch



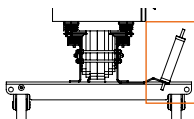
- Mounted to transformer chassis
- Actuation left-hand/right-hand at choice

## Ventilation system



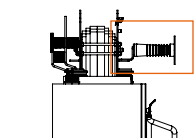
- Capacity increase up to 40%
- To cover brief power peaks

## Surge arresters



- Customer information required re. choice of model

## HV wired to post insulators



- To relieve the mechanical load on the terminals



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