Bowers
Electricals Ltd
Bowers Group of Companies

CAST RESIN TRANSFORMERS

Tel: 01773 531531 | enquiries@bowerselec.co.uk | www.bowerselec.co.uk

Table of Contents

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Bowers Electricals Ltd supplies a wide range of distribution and special cast resin transformers from 10 kVA and up to 5000 kVA up to 36 kV. All transformers can be provided with ventilated customised protection enclosures, designed according to specific client needs.

We offer customized transformers for special applications: rectifiers for 6-12-18-24-36 Pulse, Step up transformers, autotransformers & starting transformers, multi-voltage transformers for photovoltaic application, earthing transformers, different types of reactors, seismic proof units, traction transformers, test room transformers, etc.

All of our transformers are manufactured and tested in compliance with IEC 60076-11 standards and in particular meet the requirements for climatic (C), environmental (E) and fire (F) classes:

Climatic class C2:
Transformers suitable for operation, transport and storage at temperatures down to -25°C.

Environmental class E2:
Transformers suitable for operation in environment where they can be subject to frequent condensation, heavy pollution or a combination of both.

Fire class F1:
Transformers exposed to a fire hazard. They are characterised by restricted flammability, low emission of toxic substances and opaque fumes.

Why Cast Resin Transformers?

Extremly Low Fire Risk
Cast resin materials are less inflammable and can be defined as self-extinguishing. There is no need for special fire protection coatings. When engulfed in flames the heat given off from the cast resin is reduced and harmful gasses are decreased. These advantages can make cast resin transformers a perfect choice for installations inside hospitals, public buildings, airports, subways, mines, oil rigs, nuclear power plants, ships, etc.

Reduced Maintenance
Cast resin transformers are designed to withstand the worst climatic and environmental conditions. Preventive maintenance consists of a few simple checks and basic cleaning.

Versatility and Performances
Cast resin transformers can cope well with overloads found in most typical installations.

Low Operation Costs
The low losses in the magnetic core and in the windings can reduce the costs of operation and ownership.

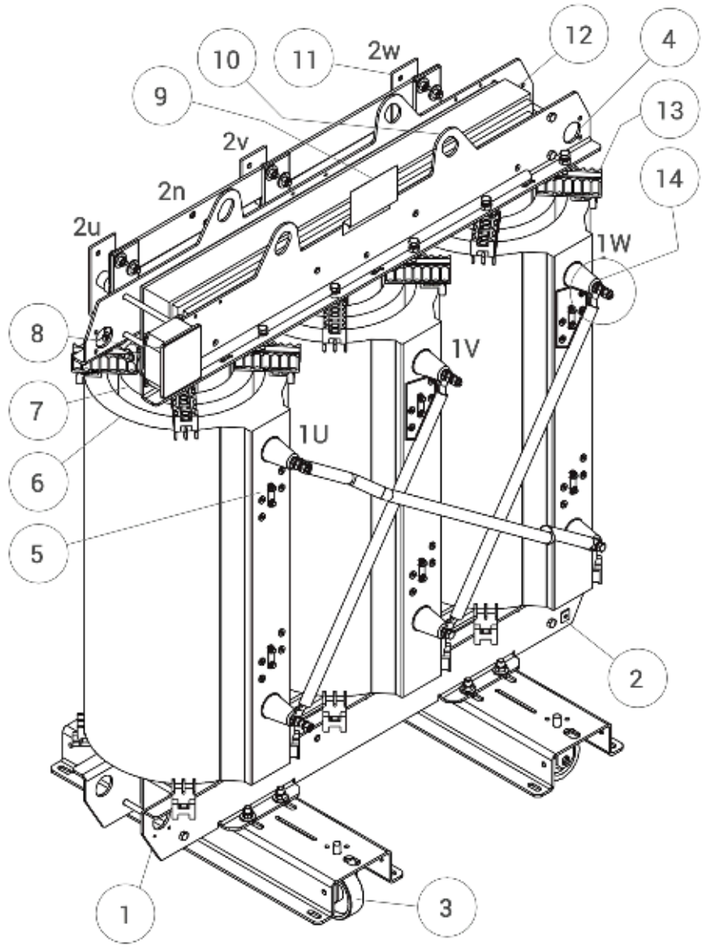
High Short-time Overload Capability
Current density in the windings of cast resin transformers is considerably lower than in those of liquid-immersed transformers. Short-time load peaks, such as with wind power installations, can be easily overcome without there being a need to oversize.

High Reliability
The modern technology employed in the manufacturing and testing process of windings gives the product a high level of reliability.

No Special Cooling Liquids Required
Cast resin transformers are exclusively air cooled. There are no liquid coolants, which could be released into the environment. There is therefore less maintenance of cast resin transformers, compared to liquid-filled units.

Advantages of IP Enclosure
Instead of traditional transformer bays, simple IP enclosures can be used for access prevention and protection of cast resin transformers. IP enclosures come in different types and colours depending on the client's needs and preferences.

Standard Accessories
& Accessories upon request



Standard Components and Accessories:

1. Steel core clamps
2. Earthing lugs
3. Bi-directional rollers
4. Haulage holes
5. HV tapping links
6. High voltage windings
7. Low voltage windings
8. Auxiliary marshalling box
9. Rating plate
10. Lifting eyebolts
11. LV terminal bars
12. Magnetic core
13. Winding end blocks
14. HV terminal bolts

Optional Components and Accessories:

- Standard or customised Enclosure (IP 21-54)
- HV and LV cable boxes
- Marshaling box
- Anti-vibration pads for wheels
- Temperature protection relay
- Forced cooling system
- Further accessories upon request

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Designed according to UK specifications

We can supply standard and special cast resin transformers with IP rated protection enclosure, equipped and designed according to specific needs. Following clients request, we can provide LV barwork (made of aluminium or copper), marshalling box, LV cable box, HV cable box, HV bushings. Alternatively the protection enclosure may be supplied with cut-outs having gland plates. All IP enclosures may be provided with double access doors or hinged door with standard or special locks.


IP54 marshalling box with temperature protection relay


IP 54 protection enclosure for outdoor installation


Typical LV cable box


HV cut out to suit switchgear


HV neutral cable box


General view with removed inspection panel

Eco Design Regulation 548/2014 Tier 1 & Tier 2

The European Commission directive requires significant Energy savings as stated in the EU Regulation 548/2014 that came into force for all distribution transformers operated in the EU Countries. The first stage Tier 1 came into force from July 1st 2015 and is followed by the second stage Tier 2, which was introduced in July 2021. This reduces the Tier 1 no-load losses by 10% and short circuit losses (up to 630 kVA) by 6%.

Bowers Electricals Ltd is offering cast resin transformers with losses which are in line with Tier 2 of Regulation 548/2014. Thanks to extensive experience in the production of magnetic cores, efficient and effective design of transformers and constant research of new materials, we offer our customers the best optimisation of their operating costs by using our Tier 2 transformers. We exclusively employ highest quality certified magnetic laser steel and accurately select the best materials for windings. Power transformer designs have shown very reduced level of magnetic induction, to give significantly lower no-load losses.

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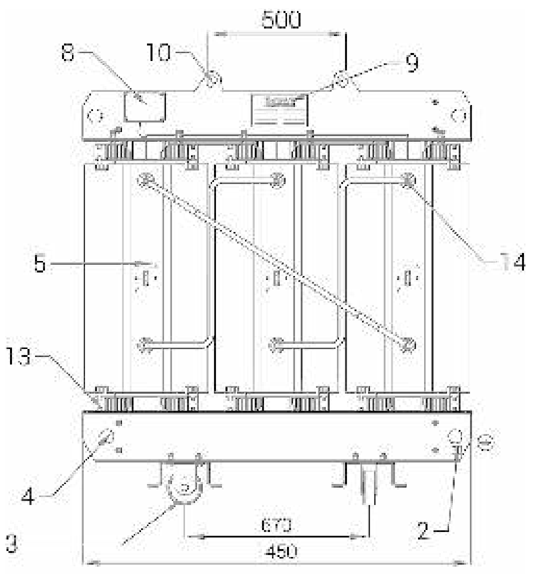
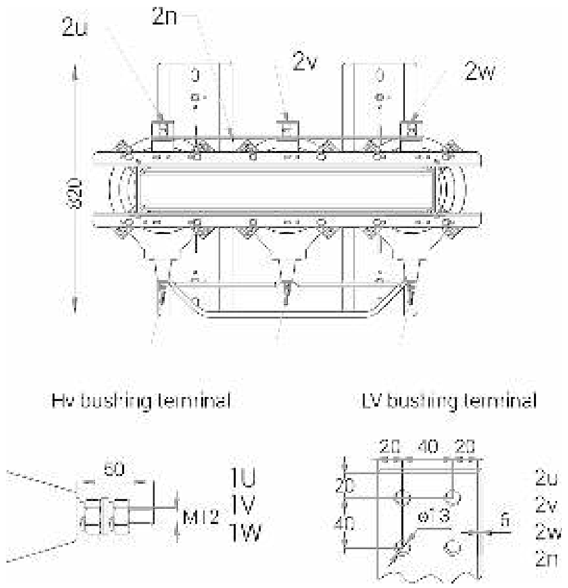
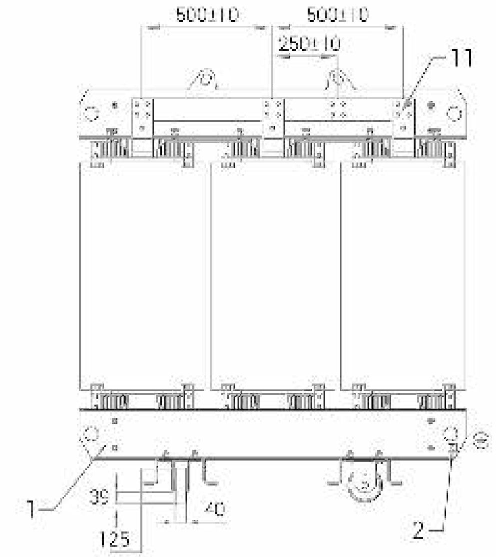
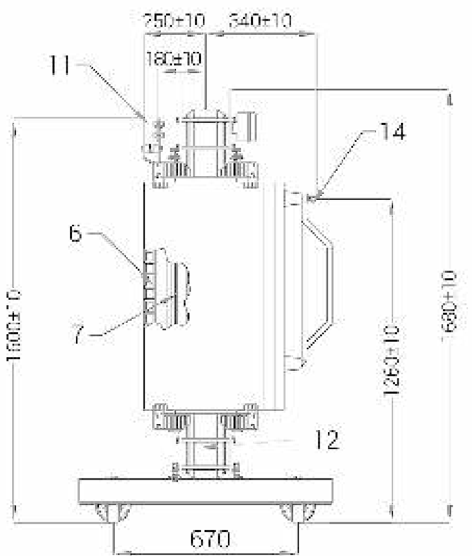
Eco Tier 2 Drawing Example





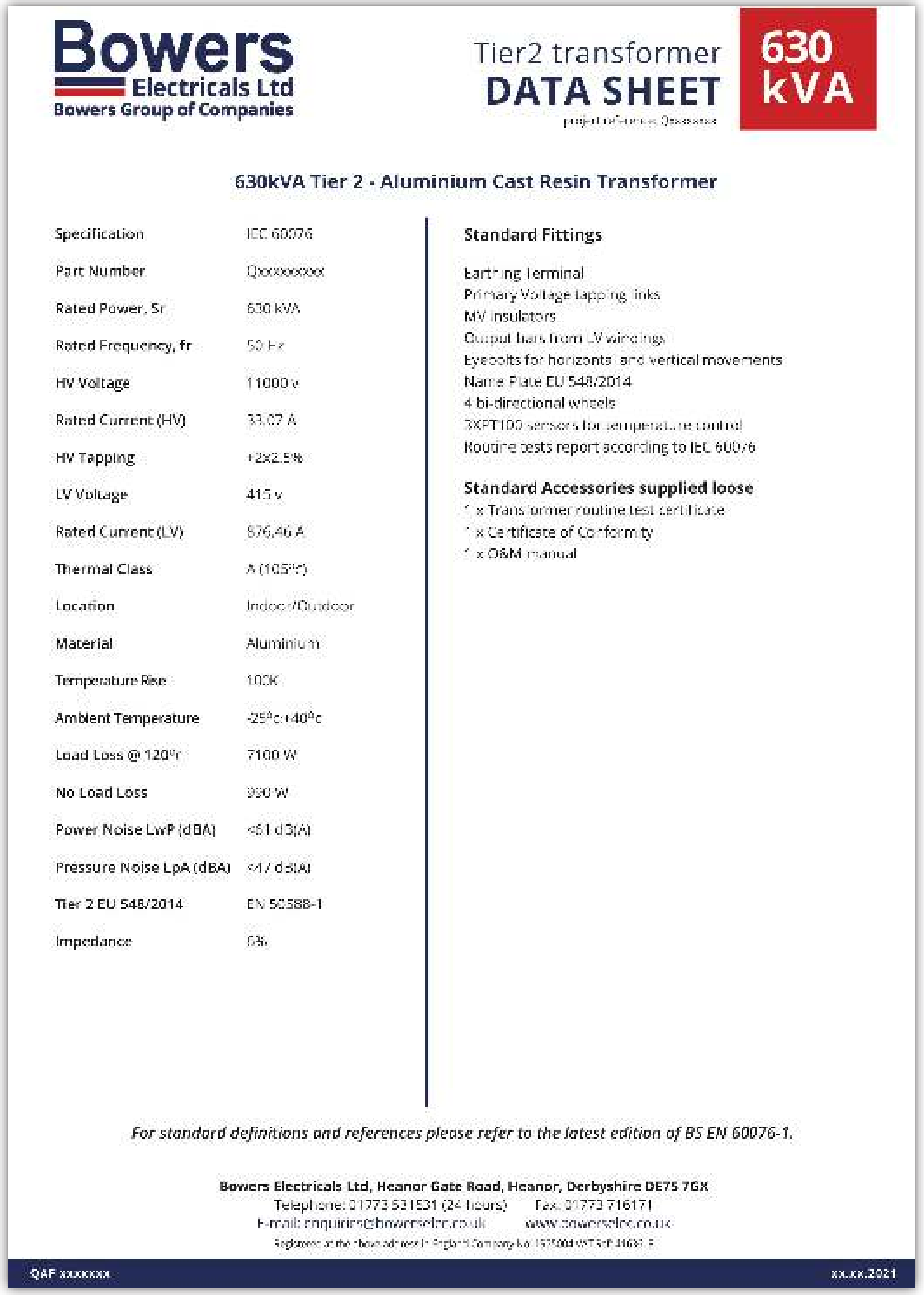




DESCRIPTION	
1	Core Clamps
2	Earth Tapping M12
3	Bi-directional Rollers
4	Haulage Holes
5	HV Tapping Links
6	HV Windings
7	LV Windings
8	Marshalling Box
9	Rating Plate
10	Lifting Eyebolts
11	Output LV Bars
12	Magnetic Core
13	Windings End Blocks
14	Imput HV Terminals

DESCRIPTION	
DRAWN	
CHECKED	
POWER [kVA]	630 [50Hz]
VOLTAGES [KV]	11000=/- 2X2.5% / 0.415
VECTOR GROUP	Dyn11
WEIGHT [KG]	1800 (+5%/-10%)

Eco Tier 2 Data Sheet Example



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Tier2 transformer
DATA SHEET

630 kVA

630kVA Tier 2 - Aluminium Cast Resin Transformer

Specification	IEC 60076
Part Number	Qxxxxxxxx
Rated Power, Sr	630 kVA
Rated Frequency, fr	50 Hz
HV Voltage	11000 v
Rated Current (HV)	33.07 A
HV Tapping	±2x2.5%
LV Voltage	415 v
Rated Current (LV)	876.46 A
Thermal Class	A (105°c)
Location	Indoor/Outdoor
Material	Aluminium
Temperature Rise	100K
Ambient Temperature	-25°c:+40°c
Load Loss @ 120°c	7100 W
No Load Loss	990 W
Power Noise LwP (dBA)	≤61 dB(A)
Pressure Noise LpA (dBA)	≤47 dB(A)
Tier 2 EU 548/2014	EN 50588-1
Impedance	6%

Standard Fittings

Earthing Terminal
Primary Voltage Tapping links
MV insulators
Output bars from LV windings
Eyebolts for horizontal and vertical movements
Name Plate EU 548/2014
4 bi-directional wheels
3XPT100 sensors for temperature control
Routine tests report according to IEC 60076

Standard Accessories supplied loose

1 x Transformer routine test certificate
1 x Certificate of Conformity
1 x O&M manual

For standard definitions and references please refer to the latest edition of BS EN 60076-1.

Bowers Electricals Ltd, Heanor Gate Road, Heanor, Derbyshire DE75 7GX
Telephone: 01773 531531 (24 hours) Fax: 01773 716171
E-mail: enquiries@bowerselec.co.uk www.bowerselec.co.uk

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For further information and questions please do not hesitate to contact us at enquiries@bowerselec.co.uk or phone us: 01773 531 531

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Bowers Electricals Ltd, Heanor Gate Road, Heanor, Derbyshire, DE75 7GX