

# BC transformateurs

MV & LV Equipment

*Transformers*

*Reactors*

*Special windings*



With a diverse product range, **BC transformateurs** specialises in the design and manufacture of windings for a wide variety of applications.





## *The flexibility of a small company,*

*The experience we have built-up since 1948 makes **BC transformateurs** your ideal partner for the design and manufacture of transformers and reactors, on all markets: Energy, Industry, Infrastructures, Buildings.*



## *Our assets for your satisfaction*

### *Research and development*

BC transformateurs' technical departments

- have a mastery of very wide ranging designs,
- develop new and innovant concepts.

### *Competitiveness*

Our knowledge of the national and international markets means that we are able to adapt to the technical, economic and commercial contexts of each contract.

### *Delivery and adaptability*

- 48/72 h standard LV transformers and autotransformers, depending on the power rating.
- 2 to 15 weeks special windings, depending on the characteristics.

### *Services*

The presence of the Schneider Electric group's subsidiaries throughout the world means that BC transformateurs is able to provide rapid and reliable technical support.



### *Technical know-how*

Our technical know-how, along with our high performance design tools let us constantly and accurately define the solutions adapted to your requirements. Our up-to-date technical resources, such as the 3D CAD system, ensure that all electrical and mechanical criteria are respected from the design stage of your equipment.



## *the power of a large group...*



*Our high performance design and test resources and ISO 9002 certified production unit mean we can respond to all of our customers with the best possible guarantees of reliability, quality and capacity for adapting to specific constraints.*

### *Certified quality*

Designing and manufacturing your products at BC transformateurs ensure you have the reliability of our services.

#### **Accreditations and certifications**

ISO 9002,  
EDF (French electricity board) nuclear,  
SNCF (French railways) fixed equipment AQF2,  
Lloyd's Register, Bureau Veritas,  
Det Norske Veritas,  
American Bureau Shipping, etc.



### *Compliance with standards*

- IEC 60076 power transformers
- IEC 60726 dry type power transformers
- IEC/EN 61558-2-4 isolating transformers for general use
- IEC/EN 61558-2-6 safety isolating transformers for general use
- IEC/EN 61558-2-15 isolating transformers for the supply of medical rooms
- IEC 289 inductor coils



Each device is subjected to tests to check its quality and compliance:

- systematic routine tests
- type tests
- temperature rise
- shock waves
- partial discharges
- water pressure
- harmonic simulations

The results of these tests are then written and initialed on the device's individual test certificate.





## Our standard windings

### A standard range of transformers and autotransformers

- dry type impregnated equipment, single-phase or three-phase
- power: 1 kVA to 1250 kVA
- voltage < 1100 V
- frequency: 50/60 Hz
- natural air cooling
- available in stock from 2 to 400 kVA, 400/400 V or 400/231 V
- optional associated circuit breaker

A three-phase or single-phase transformer modifies the rated voltage of an installation.

It can also be used for other functions:

### Transformers

#### Isolating

**Isolate a device or an installation from electrical disturbances**

- fitted with an electrostatic screen, the transformer attenuates high frequency disturbances
- when connected in delta, it eliminates 3<sup>rd</sup> order harmonics
- it provides galvanic insulation between the input and the output

#### Safety

**Ensure the personnel safety and control**

With an output voltage of 24 V or 48 V, the transformer can be used for control & command applications and automated systems.

#### Adapting

**Modify the earthing system**

A transformer ensures:

- maximum service continuity (IT system)
- reduced electrical disturbances
- personnel protection

+ info: ART. 55466

#### Adapting voltage to requirements

This function is possible using a transformer, but also by using an autotransformer.

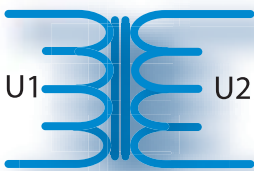
### Autotransformers

**A three-phase or single-phase autotransformer**

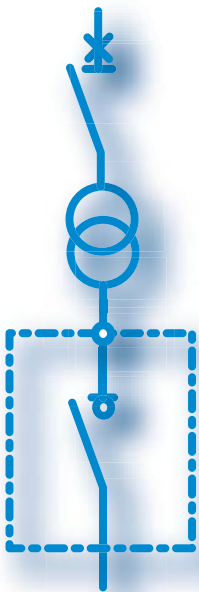
also changes the voltage but, when compared to a transformer:

- is smaller than a transformer with the same power rating
- is more economical
- is made up of a single winding
- does not change the earthing system
- does not provide galvanic insulation

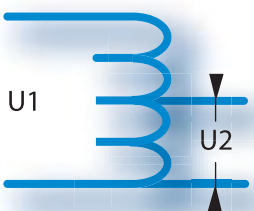
+ info: ART. 55473



Single-phase transformer



Three-phase transformer



Three-phase autotransformer



## Our specific windings

*LV & MV equipment adapted to the requirements of machine manufacturers, integrators, ...*

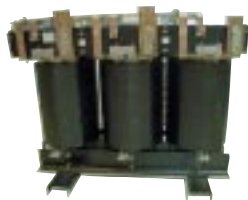
BC transformateurs is your ideal partner for defining your requirements and writing your specifications, but also for accompanying you during the optimisation of your process and the integration of associated equipment (protection, rectifier, etc.).

## Transformers and autotransformers

- Dry type cast resin or impregnated equipment
- power: 160 VA to 6 MVA
- voltage  $\leq 36$  kV
- frequency  $\leq 6$  kHz
- natural air, forced air, water or oil cooling
- alternating or direct current  $\leq 20$  kA
- copper or aluminium winding

**Within our range, you will find the equipment which is best suited to your requirements**

- **single-phase**
- **three-phase**
- **three-phase/single-phase**  
allows a 3-phase network to be converted into a 1-phase network.
- **Scott**  
allows a 3-phase network to be converted into a 2-phase network (or vice-versa). It consists of 2 single-phase transformers.
- **Leblanc**  
provides the same function as the Scott transformer but it has smaller dimensions, as it consists of a single device.



Reversible transformer



Water cooled rectifier-transformer



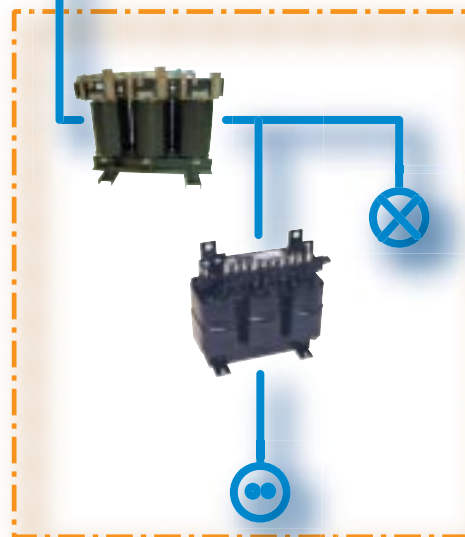
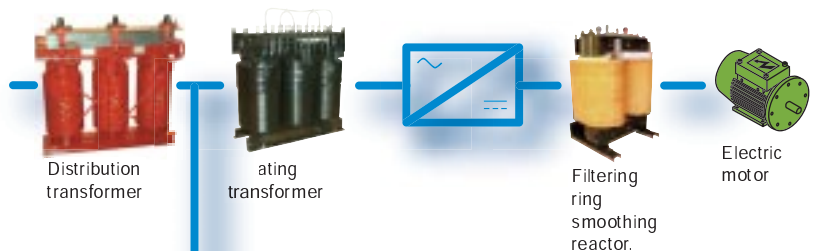
Cast resin transformer



Cast resin homopolar generator



5500 Hz transformer



### Characteristics for you to specify

- power
- primary and secondary voltages (no-load or on-load)
- three-phase or single-phase (specify connection)
- cooling method
- protection degree
- frequency
- operational conditions



## ... and industrialists



63 kVA voltage regulator

### The servo-motor voltage regulator

Three-phase or single-phase, dry type or immersed in oil, it stabilises a network's voltage from  $\pm 20\%$  to  $\pm 1\%$ .

- power < 630 kVA
- voltage < 1.1 kV

#### Characteristics for you to specify

- power
- primary and secondary voltages
- frequency
- regulation



Harmonic filtering reactors

### Reactors

Impregnated or cast resin, they can be:

- with or without a magnetic circuit
- alternating or direct current  $\leq 20$  kA
- frequency  $\leq 6$  kHz
- network voltage  $\leq 36$  kV
- natural air, forced air, water or oil cooling

There is a reactor for all your applications:

#### ■ short-circuit current limitation

This is an air reactor (without a magnetic circuit) which, when placed in the network, limits the short-circuit current downstream of the installation.

#### ■ smoothing

It is installed at the output of a rectifier to reduce the alternating current ripple which is superimposed on the direct current.

#### ■ harmonic filtering

This is a reactor with a magnetic circuit which, when combined with capacitors, attenuates harmonic currents.

#### ■ creating a neutral for protecting MV networks

The neutral point winding is a reactor wound in zig-zag with a neutral output.



Filtering reactor



«Mantle» reactor

**BC transformateurs is able to provide a solution for all requests and will meet your specification and specific contract requirements.**

#### Characteristics for you to specify

- inductance value
- value and type of current which will pass through it
- insulation voltage
- frequency
- operational conditions
- current breakdown
- saturation conditions
- cooling method
- protection degree



Cast resin MV air reactor



Oil immersed charging reactor





## Our applications

### Motor starting autotransformer



450 kW motor starting autotransformer

At start-up, a motor behaves like a short-circuited transformer. Its start-up current can reach 8 to 10 times its rated current.

This inrush current, which the network is often not able to support, can be reduced by using an autotransformer which allows the start-up to be carried out in three stages.

Reduced start-up current is achieved by reducing the voltage to the motor terminals, thus reducing the start-up torque.

#### Characteristics for you to specify

- motor power (kW)
- network voltage
- frequency
- rated current
- start-up current/reduced start-up current
- duration and number of start-ups per hour
- protection degree
- operational conditions

### Marine equipment



Transmitter transformer

Throughout the world, our on-board equipment benefits from the 30 years of experience we have in Navy, Merchant Navy and off-shore platforms, as well as that in submarines, aircraft carriers, liners, oil tankers, container ships, platforms, etc.

Energy adaptation and conversion requires BC transformers' presence in all areas of the electrical network:

- filtering and smoothing reactors
- isolating transformers
- propulsion transformers
- transmitter transformers

+ info: ART. 55474

### Transformers for medical rooms



Designed in accordance with the IEC/EN61558-2-15 international and European standards, they are certified compliant by the Electro-test inspection authority.

Apart from the imposed IT earthing system (insulated neutral/earthed mass) and a limited leakage current, these transformers have the following special features:

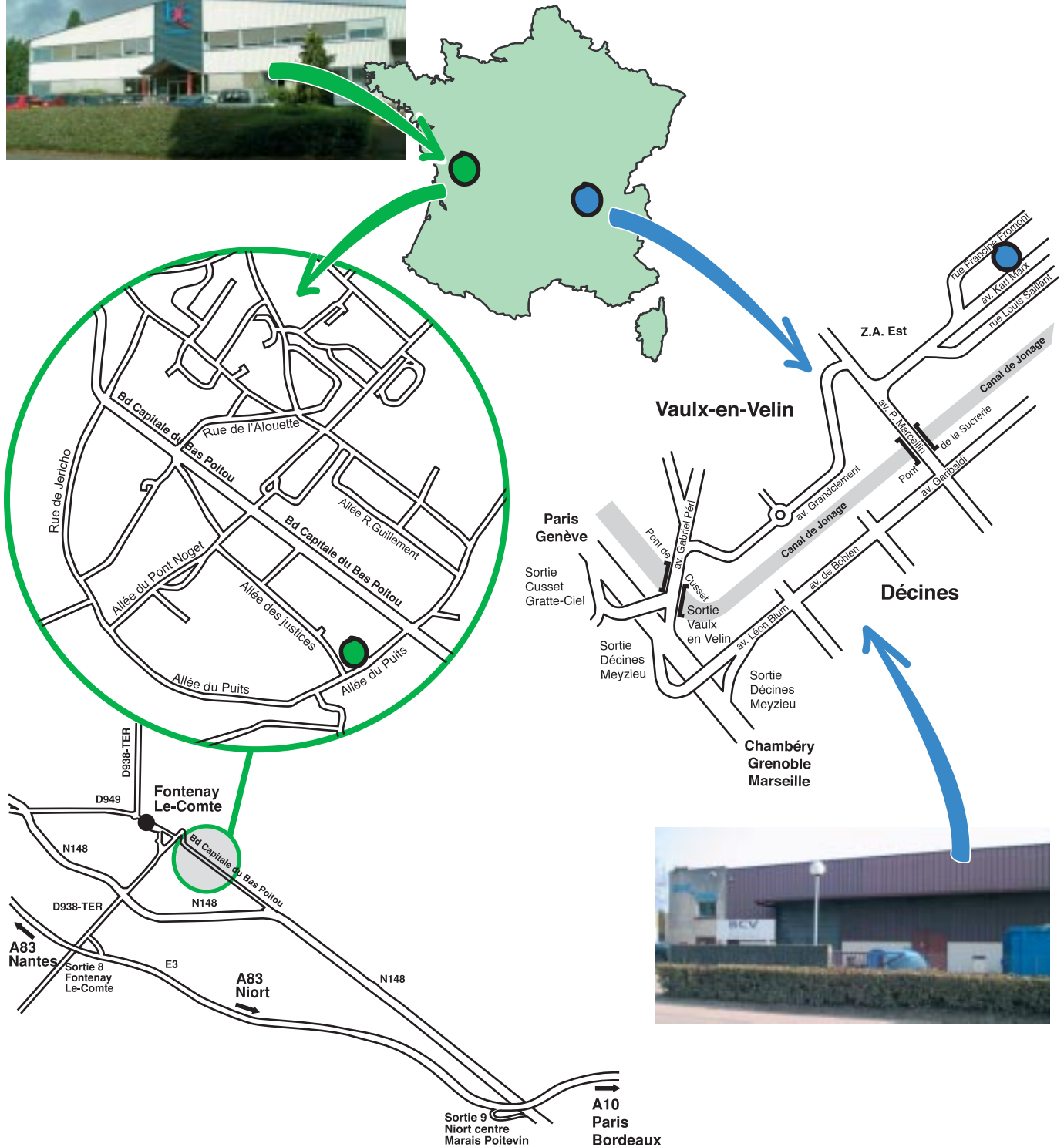
- output voltage < 250 V
- short-circuit voltage < 3 %
- magnetising current < 3 %
- inrush current < 12 I<sub>n</sub>
- the single-phase versions have a secondary middle point output on an insulated terminal, the three-phase versions are required to be star/star connected with neutral output.



Transformers for medical rooms

# BC transformateurs

Subsidiary of Schneider Electric since 1983 and leader in the French market for winding design and manufacture, we welcome you at both our sites.



## Schneider Electric Industries SAS

BCV technologies

Z.I. Allée des Justices

85200 Fontenay-le-Comte

Tel: 33 (0)2 51 53 22 00

Fax: 33 (0)2 51 51 06 45

<http://www.schneider-electric.fr>

14, rue Francine Fromont

ZA Est

69518 Vaulx-en-Velin

Tel: 33 (0)4 78 79 50 20

Fax: 33 (0)2 72 04 42 11

As standards, specifications and designs change from time to time, please ask for confirmation of the information given in the publication.



this document has been printed on ecological paper

Created by: COM DEF - AMEG

Illustrations: CBJ Créations ; Photos: Schneider Electric Industries SAS

Printing: Imprimerie des Deux-Ponts

FRAED103731EN

ART. 57736

06/2003



# Our accessories

## Optional items which can be added to each piece of equipment

■ IP21 to IP55 protection enclosures, standard colour RAL 9002, special colours on request.



IP21  
RAL 9002



IP31 enclosure  
RAL 5003



Water-tight tank  
RAL 7033

■ set of 4  
bi-directional  
rollers



■ set of 4  
silentsblocs



■ class II  
insulating kit



■ thermal  
protection:

□ PTC sensors +  
Zhiel convertor



MSF 220 K



MSF 220 V

□ PT100 sensors +  
T154 or T935  
electronic  
thermometers



□ analogue  
thermometers



■ etc.

# Our references

BC transformateurs' references mean that you can be confident, whatever market you are in, when it comes to adapting and making safe the most delicate of installations.

## energy



- EDF

## industry



- Union Fenosa - Spain
- Alstom



## ■ data and telecoms

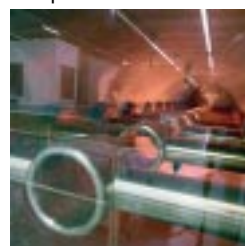
- France Telecom
- ST Microelectronics - France
- Thales broadcast & Multimedia - France
- INTEL - Ireland

## buildings



## ■ hospitals

- Gent University Hospital - Belgium
- Nîmes University Hospital - France



## ■ buildings and structures

- CERN - Switzerland
- Synchrotron - France
- BNP - France

## ■ commercial centres

- Supermarket chains

## infrastructures



## ■ water treatment plants

- Vancouver plant - Canada
- Las Vegas plant - United States
- CGE - France



## ■ tunnels

- Channel tunnel - France/Great Britain
- Colombey and Leuk tunnels - Switzerland
- Westerschelde tunnel - Holland



## ■ railways

- Hong Kong underground
- Sao Paulo underground
- Athens underground
- Shanghai underground



## ■ marine

- Queen Mary II - Great Britain
- Vietsopetro - Vietnam
- Charles de Gaulle - France



## ■ airports

- Roissy - Charles de Gaulle - France
- Bamako - Mali
- Madrid-Barajas - Spain