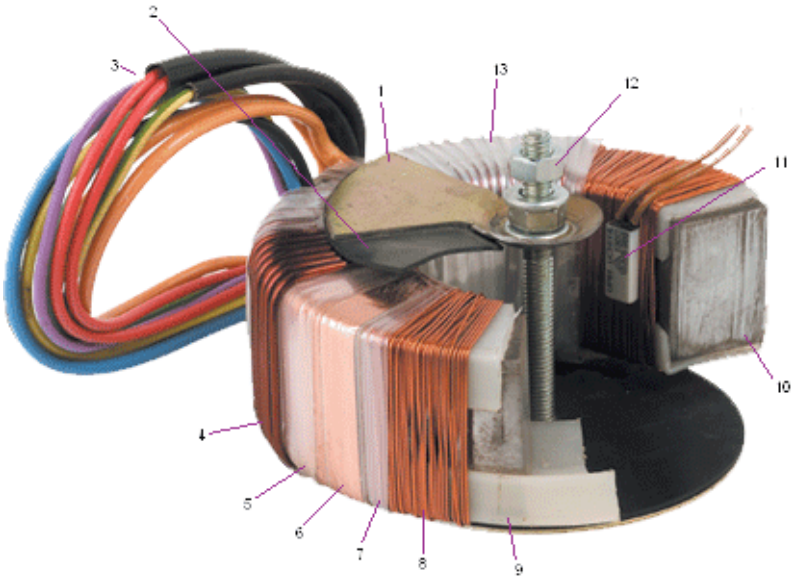
PRESENTATION

Torivac has over thirty years of experience in manufacturing all types of toroidal transformers.
The toroidal transformer represents, like no others, the ideal design for a transformer. In fact, Faraday designed and wound the first transformer on a toroidal core. The toroidal cores manufactured by Torivac are made of magnetic sheet metal with very low loss levels and high induction saturation, which when heat treated allow for reaching saturation values of up to 16,000 gauss. In the toroidal transformer the magnetic flow is evenly concentrated in the core and, due to the absence of intermediate metal parts, vibrations are eliminated.
Similarly, as all the wound coils are spread over the surface of the core, the noise caused by magnetostriction practically disappears, which favours the dissipation of heat. These features substantially improve the characteristics and yield of the toroidal transformers with respect to conventional ones.



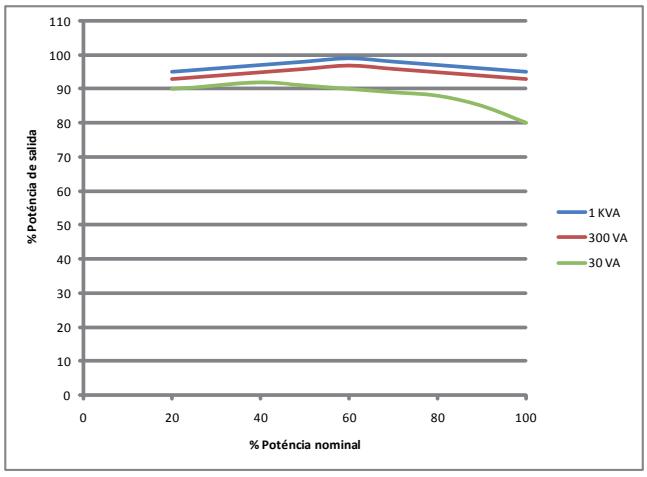
1. Metallic disc
2. Sochet-pan of rubber
3. Out
4. Wound secondary
5. Kerb betwen shielded and secondary
6. Electrostatic shielded
7. Kerb film polyester betwueen primary and shielded
8. Wound primary
9. Cover toroidal with nylon
10. Screw, nut and socket-pans
11. Magnetic core
12. Thermostat
13. Final kerb or foreing covering

CHARACTERISTICS

Efficiency

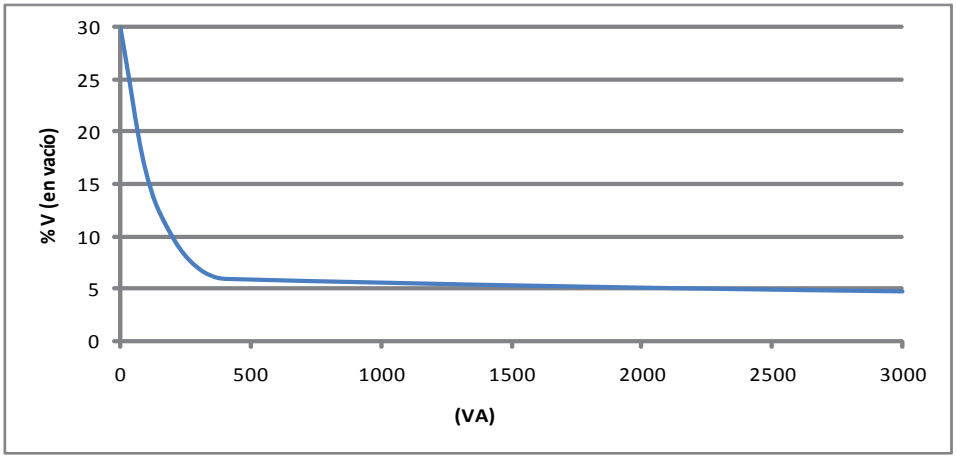
Is the ratio between the output and the input power ratings that is variable depending on the size of the transformer and the working conditions, but which is almost always higher than that of conventional transformers of a similar power rating. The typical efficiency of our standard transformers, from 20VA to 3000VA varies between 82% and 96% (see diagram).

The efficience of a toroidal transformer is mainly conditioned by the resistive losses of the copper wire and the losses in the core. The resistive loses are always less in the toroidal transformer that in the conventional ones by the lower quantity of copper used in the windings . With regards to the core losses, by hysteresis, are reduced to 0,98W / Kg, at an induction of 1.6T, by means of an appropriate heat treatment of recrystallization and the losses induced by Foucault's currents are practically negligible in our cores made from M4 and M5 magnetic sheet.



VOLTAGE VARIATION "NO LOAD"/"FULL LOAD"

The voltage drop of a transformer is determinate by the quotient between "no load" and "full load" secondary voltage. This rate is an important parameter to be taken into consideration when designing the transformer. It allows an approximate calculation of the nominal load voltage.
The rate changes with the size of the transformer. At greater power ratings there is generally less resistance in the copper wires used in the wound coils and better characteristics can be achieved.
The attached diagram reflects the increase in no load voltage (%), with respect to the nominal load voltage, based on the power rating of the transformer.



Radiation

The absence of air-gaps in the construction of the core, its heat treatment, the painstaking design and the meticulous winding techniques used, allow achieving of very low magnetic dispersion, which is almost insignificant when compared with that generated by conventional transformers. When it is required that magnetic dispersion must be totally eliminated, one can add electromagnetic screens or shielding.
The application of the toroid transformers in the stages of power supply and power drawing is ideal as a good signal/noise ratio can be achieved.

Electrostatic shielding

The electrostatic screens are constructed using a copper layer winding coil, insulated with polyester, which covers completely the primary winding and has the function of filtering out the electrostatic interferences from the mains power supply, when the voltage is transformed and to derive to ground in case of failure of the main isolation.

Start up transitory electric currents

The toroidal transformers usually have higher transitory electric currents on starting up than conventional ones due to the absence of air-gaps in the core. For this reason we recommend you to protect the power supply with slow melting fuses or controlled starting systems.

Temperature increase

The working temperature of ours toroidal transformers varies, depending on the percentage load used, as can be seen in the attached diagram. In the permanent working mode, these may increase between 55ºC and 60ºC, above the surrounding environmental temperature, even though the outside temperature of the transformer does not display increases in excess of 45ºC.

Shape factor

These types of transformers allow as no others to achieve low profiles and adapt the size to the dimensions called for in each application, adjusting the diameter and height of the cores to the final requirements.

Advantages

** High efficiency*
** Low noise level*
** Low dispersion field*
** Less heating*
** Low weight and size*
** Easy assembly*

FIELDS OF APPLICATION

The toroidal transformers have numerous fields of application, and among these we can emphasize as the most usual the followings:

* Consumer electronics
*Electro medicine.
* Converters
* Power supply systems
* Audio systems
* Security
* Telecommunications
* Low voltage lighting
* Any equipment that may require an optimal efficiency.