



Low Noise Cast Resin Transformers

The Highlights

- Extremely low magnetic Induction
- Lowering of operating temperature
- Better overvoltage capability
- Longer lifetime of transformer
- Low Noise level, for example: less 14 dB by 1000 kVA



Low Noise Cast Resin Transformer

The increasing awareness of **environmental protection** and the increasingly **stringent noise protection directives**, which apply not only to the surrounding **residential area**, but also to **industrial areas**, have strongly influenced transformer manufacturers and their production.

Even though the **New Eco-Design Regulation no. 548/2014** of the Commission for the implementation of the Eco-Design Directive 2009/125 / EC has not modified the permitted noise levels of the transformer, more and more customers are looking for **special technical solutions** requiring **extremely silent transformers**. This is particularly recommended for hospitals, hotels, congress and exhibition centers, shopping centers, office buildings, universities and schools, where noise protection is of high importance.

Many manufacturers of cast resin transformers have opted for a **mechanical solution** that limits vibrations and their effects. This method is based on the use of a special **mechanical support structure** on the transformer, which, however, can absorb only a portion of the oscillations during normal operation of the transformer.

As a result, **the noise level** of the transformer and its **oscillation** are only slightly reduced. Furthermore, the vibrations are transmitted to **the structural elements of the building**, in which the transformer is installed, amplifying the spread of the noise.

Thanks to the **long experience** in the manufacture of magnetic cores and cast resin transformers, **Power** is absolutely convinced that the mechanical solutions or supporting structures are not sufficient to meet customer requirements and guarantee **extremely low noise levels**.

The solution lies in the heart of the transformer - the magnetic core.

Unlike the most transformers manufacturers, who do not have their own core production or are using outsourcing for the procurement of this important transformer part, **Power** is producing their magnetic cores 100% internally. The mostly used materials like Laser- / M0 or M5 CRGO steel with their **perfectly insulated surfaces** minimize the losses caused by stray currents. The individual core components are manufactured by **Power** on **special machine tools** and assembled by 35 **highly trained employees** to prevent the deformation of the individual steel sheets and to ensure exact positioning.

Connections are performed in a **45° Step-lap process** to minimize any losses, vibrations and noise. The magnetic core of Power transformer is **protected against environmental influences** by means of a two-component coating. The penetration of this coating between the individual steel sheets binds them together and **prevents the noise development**.



The magnetic core makes the difference!

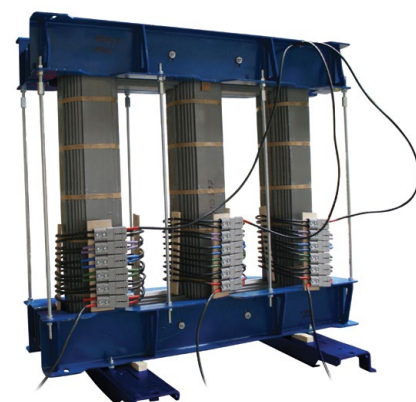
Power offers an alternative solution that effectively **prevents the formation of vibrations**. The transformer is designed and manufactured in such a way that its construction **greatly reduces the generation of vibrations** during the operation of the transformer. A correspondingly **suitable selection and combination of parameters** with respect to the dimensioning of the magnetic core (the ratio between weight and power) as well as **the core cross section** allow to create a relatively **low magnetic induction**. Very important is the **selection of the core steel**, whereby not only **the losses**, but also the **physicochemical properties** of the sheet and its **coating** play a leading role.

A Low Noise transformer, produced by Power, generates in this way a **very limited number of vibrations** and dampens the transmission of the negative effects of vibrations on the building's structural elements.

The additional manufacturing costs associated with this solution are mainly due to **the extraordinary quality of the sheet** and the weight increase of the magnetic core. However, they are simultaneously compensated by **the reduction of induction** and the **reduction of the operating temperature** of the transformer.

The POWER transformers produced in this way ensure a considerably **longer service life** and have a considerably **improved resistance to overvoltage**.

The POWER - Low Noise transformers are not manufactured as standard, but customized according to the required technical parameters.



Magnetic Core Testing



Step Lap 45°

Our example is convincing:

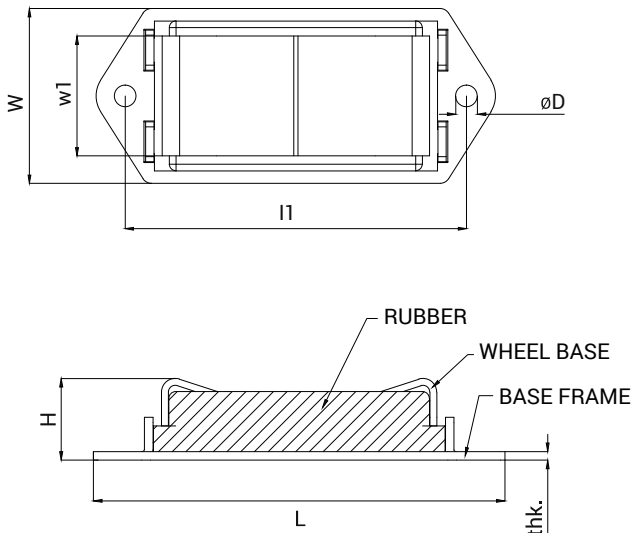
Comparison	Power [kVA]	Voltage	Regulation	Sound power level Lpa [dB]	Sound pressure level Lpa [dB]
POWER	1000	10/0,4	Nr. 548/2014	≤ 65 (A)	≤ 51 (A)
POWER Low Noise	1000	10/0,4	Nr. 548/2014	≤ 51 (A)	≤ 38 (A)

POWER - LOW NOISE TRANSFORMERS ARE DOWN BY 14 DB (A), EQUIVALENT TO 33.15%.



Our solution for retrofitting

Furthermore, Power offers two types of **self-made anti-vibration pads**, which can also be used with the **low-noise cast resin transformers** in order to significantly reduce in additional way the vibrations.



ANIVIBRATION PADS - TECHNICAL SPECIFICATIONS

Model	Ø Wheel [mm]	L [mm]	W [mm]	H [mm]	l1 [mm]	w1 [mm]	øD [mm]	thk. [mm]	Weight [kg]	Max Load [kg]	Max Compres. [mm]
PWAP125	till 125	185	70	30	140	45	11	3	0.5	800	2
PWAP200	150-200	240	105	50	205	72	13	5	1.8	1900	3

Anti-vibration pads are a **smart, compact** and **inexpensive solution** to reduce vibration and noise level of a transformer. Power anti-vibration pads are mounted under the transformer wheels to reduce the level of its noise and vibrations. According to the internal tests, anti-vibration pads manufactured by **POWER** allow to achieve **a reduction in noise emission of up to 2-3 dB (A)** from the nominal value. This can make a difference at places where noise and vibrations can be very disturbing, such as schools, hospitals, offices, apartment buildings, etc.

For further information, please do not hesitate to visit our website www.powerfullstop.com