

# Small Inductive Components

**q Q**



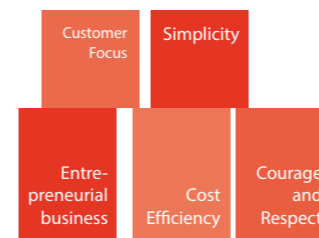
AQ Group is a global manufacturer of components and systems for demanding industrial customers. The consolidated knowledge in the AQ Group, along with a global presence, offer unique benefits to customers around the world.

AQ Group has since its inception in 1994 shown a steady and fast growth. The Group has approximately 3900 employees, whereof 70% in countries outside Sweden.

The annual turnover is € 270 Million. AQ Group is listed on AktieTorget in Sweden and has the highest credit rating AAA.



## WE ARE RELIABLE



The AQ Business concept is to develop, manufacture and assemble components and systems for demanding industrial customers and leverage our commitment to Total Quality to ensure our customers become long-term business partners.

We target customers who are world leading in their respective niches, such as road and off-road vehicles, railroads, power transmission, telecommunication, food, etc. To be a world leading company, they have to work with world leading suppliers!

AQ aims to be a world leader in cost effectiveness, quality, on-time-delivery, alertness and service. In one word – reliable.

The AQ Group has grown constantly at a steady pace all from the start 1994 to today's position as a true global actor. Our finances are strong and we will continue our growth, both organically and by acquisitions.

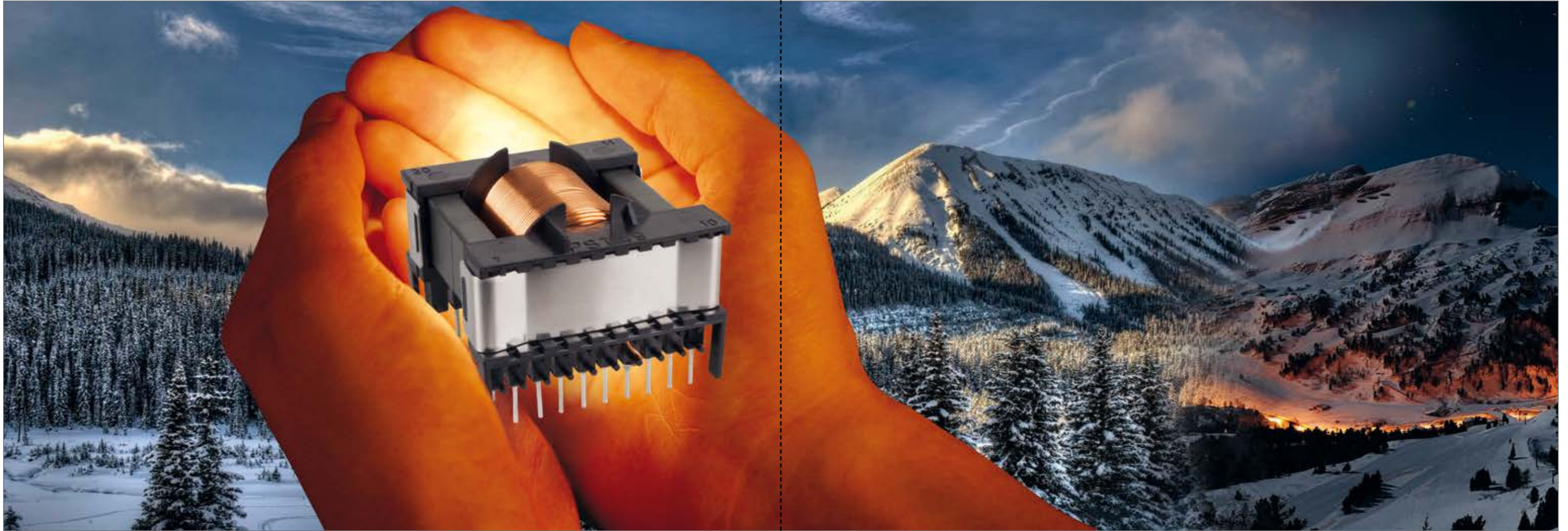


Photo: Jörgen Appelgren

Claes Mellgren  
Goup CEO

## General information

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AQ inductive components are used in some of the most demanding applications, such as high-speed trains, relay protection systems, military industry, airplanes and equipment for process automation.

Most of our products have been developed in collaboration with our customers. This opportunity is being utilized by an increasing number of companies as it makes it possible to develop cost-effective and technically optimal solutions.

## Manufacturing process



The manufacturing processes starts with raw material incoming control, followed by winding, production of mechanical parts, assembly, impregnation and routine tests.



Windings of various types and models are made by different winding machines, ensuring efficient production. Fast speed coil winding machines with three sections are used, allowing simultaneous winding of three coils.

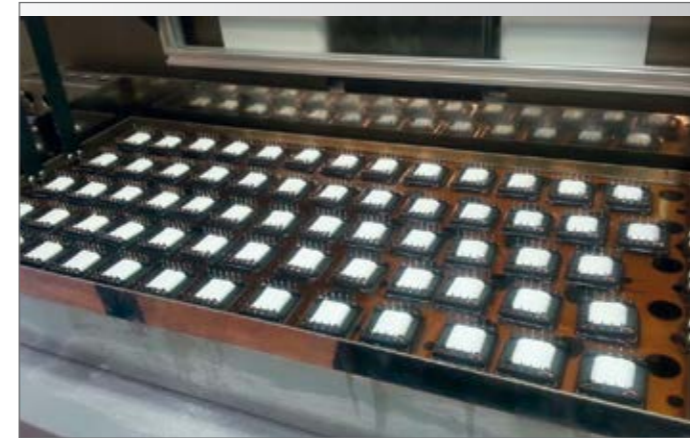


Toroidal coil winding machines are available for different ferrite dimensions and sizes. Materials used - round Cu wire, Cu foil, Litz wire and TIW-wire.

## Manufacturing process



Fully automatic stripping and crimping machines as well as foil cutting machines are available. Crimping process is covered by IPC/WHMA-A-620B and soldering is covered by IPC-A-610E.

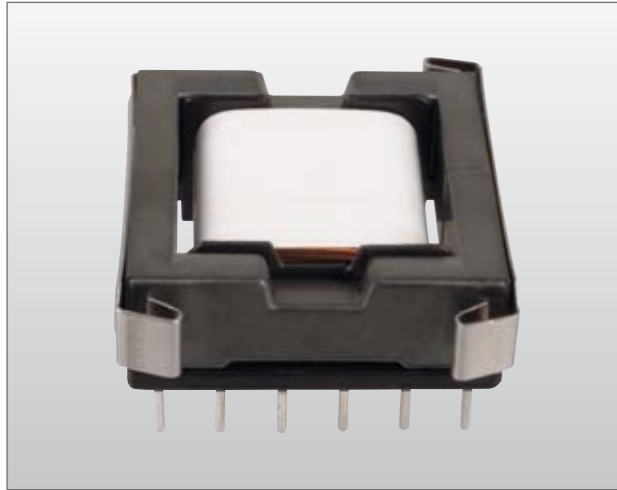


Impregnation with polyester varnish and environmentally friendly water-based paints are used for insulation and protection in combination with vacuum drying.



Casting with epoxy, polyurethane resins or silicone is performed on customer demand.

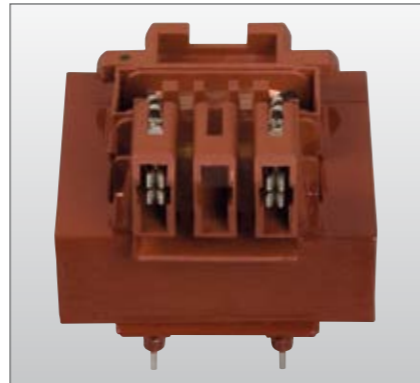
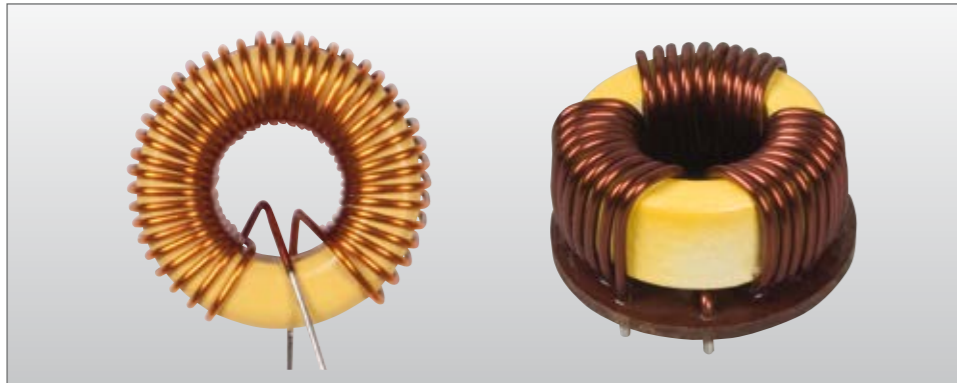
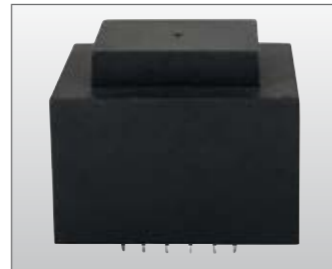
# Transformers and Inductors



Different ferrite cores and EI core laminations are used such as :

- EI 30 - EI60
- RM 4 - RM 14
- EP7 - EP 20
- E 13 - E65
- ETD 29 - ETD 59
- EFD 15 - EFD 30
- PQ 26 - PQ 50
- Air coil
- Toroids

and many other types depending on customer demands.

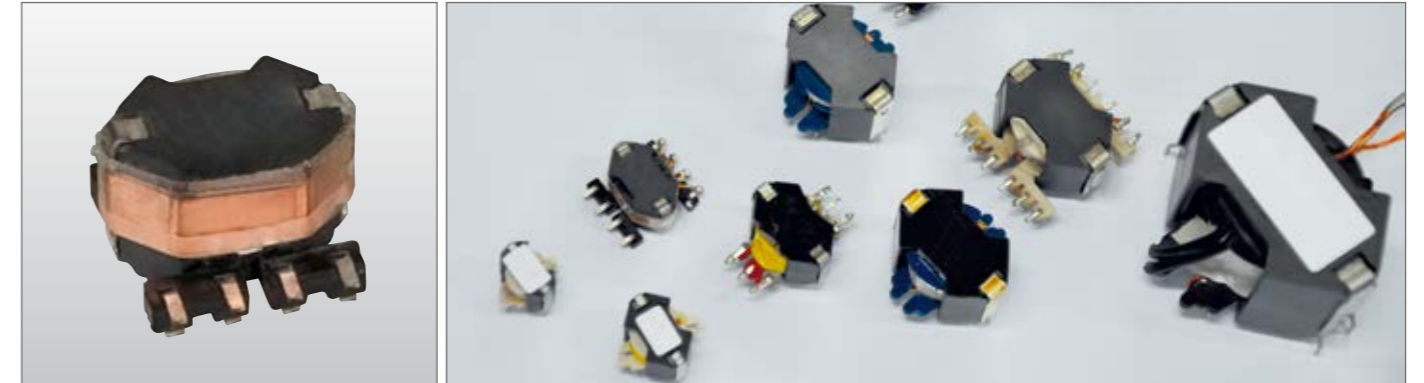
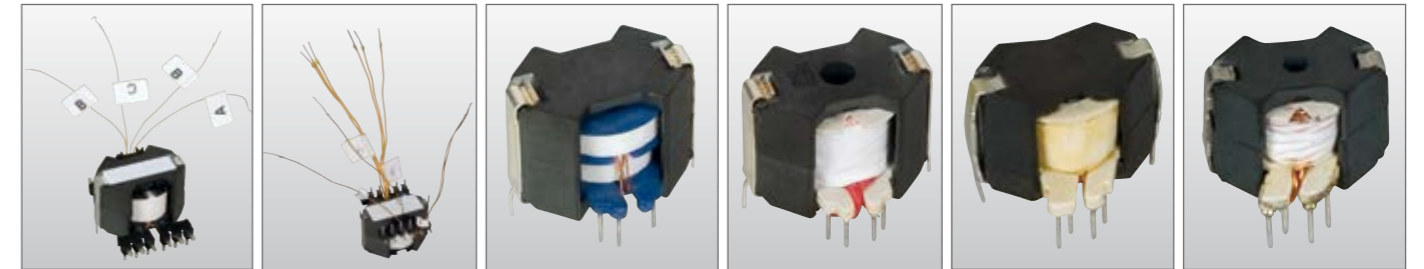


# RM Cores

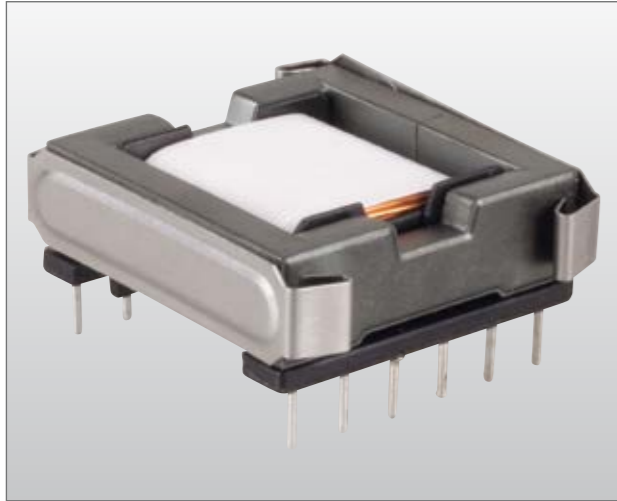
**RM cores** occurred due to the demand for coil formers with integrated pins that allow for efficient winding and high PCB packing densities.

Clamps engaging in recesses in the core base hold the cores in place, meaning glue is not normally required in this process.

RM cores can also be supplied without the center hole. These have a higher AL value and cross sectional area and are used for power transformer applications.



## EFD Cores



### EFD

(Economical Flat Design) cores have been developed in recent years to meet the increasing demand for low profile components in power transformer design. A combination of very low height and excellent throughput power, when compared to other cores of a similar height, make these cores ideal where space considerations are a priority. EFD Cores are available in a range of sizes and materials together with their associated coil formers and clips.

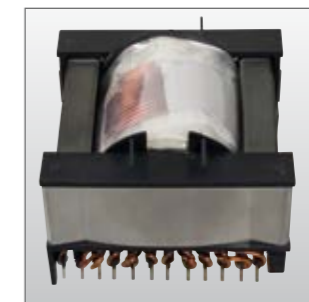
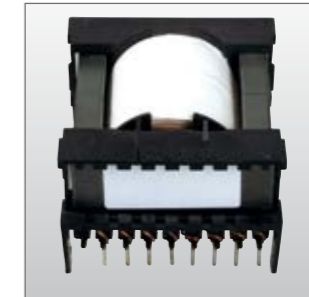
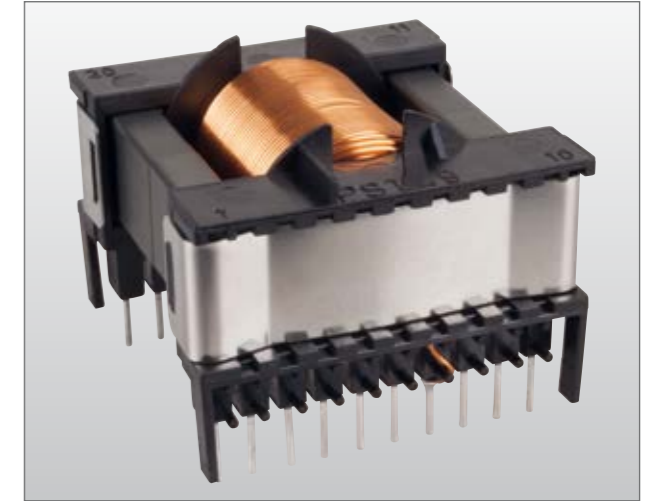


## ETD Cores

### ETD cores

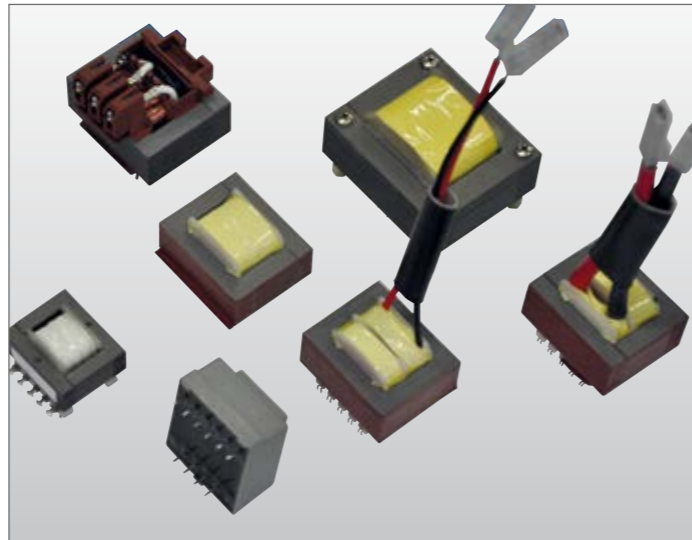
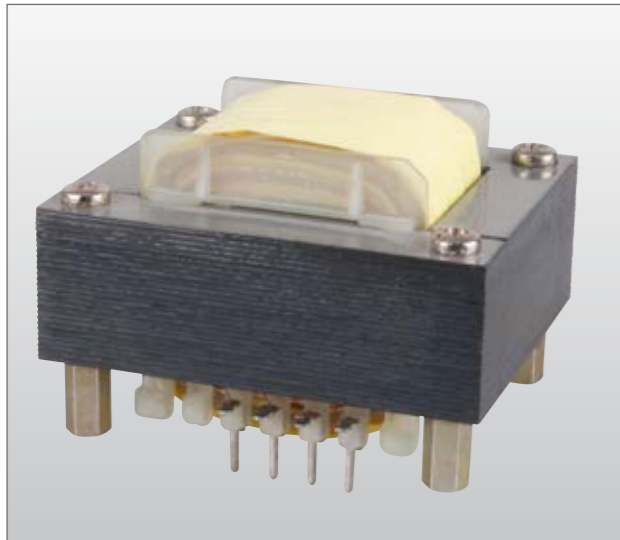
(Economical Transformer Design) cores were developed specifically for Power Transformer cores used in Switched Mode power supplies.

ETD Cores are available in a range of sizes and materials together with their associated coil formers (both Horizontal and Vertical mounting) and clips.

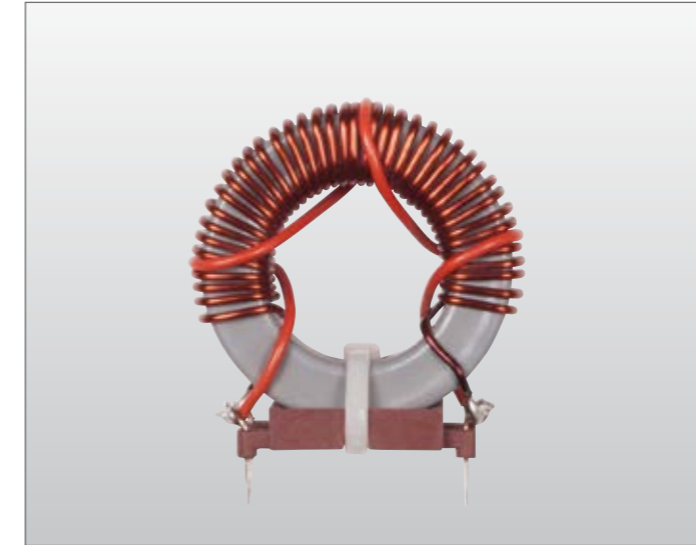


## EI Standard transformers

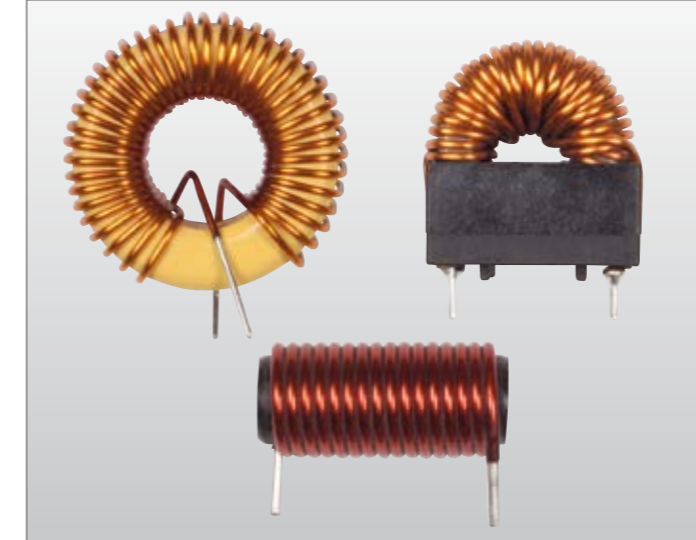
EI standard transformers offer a wide range of applications such as power supply, chokes, pulse transformers and many others.  
We cast in Polyurethane, Silicone and Epoxy



## Toroidal transformers and Inductors



Toroidal transformers and inductors are passive electronic components, typically consisting of a circular ring shaped magnetic core of high magnetic permeability material such as iron powder or ferrite, around which wire is coiled to make an inductor.  
Toroidal coils are used in a broad range of applications in AC electronic circuits, such as high-frequency coils and transformers.



## Quality and testing



100% electrical, mechanical and visual control is applied. Equipment to carry out tests required by IEC standard is available. Special testing is performed in collaboration with accredited external laboratories. Typical in-house tests:

- No load test
- Short circuit test
- Inductance measurement
- Resistance measurement
- High voltage test
- Leakage inductance
- Magnetization current



All design and manufacturing processes are certified according to the following standards:

- EN ISO 9001/2008
- EN ISO 14001

## Applications



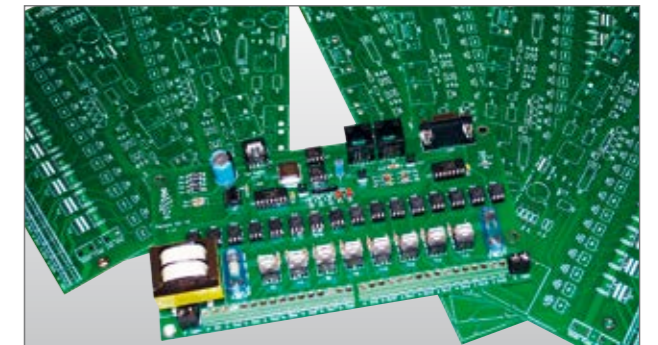
Railway traction and trackside equipment



Power distribution and industrial automation



Aerospace and defense industry



Electronics and general industry



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