

A Revolution in Transformer Design and Manufacture

Transformer Core History

In the early part of the last century Silicon Steel laminations were developed which made a significant improvement in transformer performance. Transformer size was smaller because of higher operating induction and the core loss was lower due to the high silicon content. As the technology progressed various grades of silicon steel were introduced with the emphasis on reducing the core loss.

During the 1930's ARMCO developed Grain Oriented Silicon Steels with much lower losses and higher operating induction.

'C' cores were produced in the late 1930's to take advantage of the GOSS material and these products are still produced today, and are amongst Wiltan's current product range. This type of core enables full utilisation of the strip Grain Orientation.

In 1997, an Australian engineer, Bill Jenkinson, developed the UNICORE concept which has all the advantages of traditional 'C' and 'E' but with much lower losses and excitation.

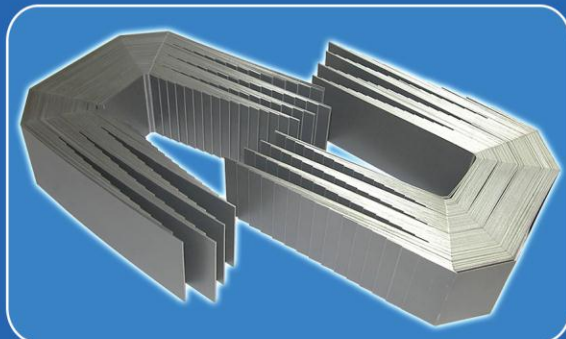
Present Day Technology

Unicore is a range of core styles which are supplied fully shaped, but not bonded, traditionally cut or ground

Unicore can be manufactured from various magnetic materials, with near full retention of the materials magnetic properties, but GOSS is generally the preferred material – grade and gauge chosen to meet the customer's particular specification.

The finished core is supplied ready to be inserted into the customer's winding, or wound upon, depending on the core type.

Wiltan offer a complete bespoke service, including full technical assistance at the design and assembly stage, if required, so that the customer gets the core best suited for their particular magnetic specification and assembly criteria – whether the requirement is for a small CT core weighing a fraction of a Kgm or a three phase distribution core weighing a few tonne.





WILTAN
magnetic components

Unicores

Advantages of Unicore

- 1) Near raw material magnetic properties are retained.
- 1) All cores are produced as customer specials – this is achieved because no tooling is required (therefore, no tooling costs) and all core parameters are stored in software.
- 1) There is no concentrated gap as with traditional bonded 'C' and 'E' cores and no degradation due to resin bonding. With Unicore the gap type can be chosen at the design stage but is normally some form of distributed. However concentrated gaps can be produced if required and can also be spaced.
- 1) Because the cores do not need to be resin bonded they can be operated at a much higher temperature.
- 1) When Unicore is being used as an alternative to a mitred core, whether single or three phase, there is no scrap produced and the build-facture is normally typically 70% of the mitred cores.

Some Products Available (but not exclusive)

- 1) DUO Core
- 2) Single Phase
- 3) Three Phase
- 4) Distributed Gap Cores
- 5) Cruciform
- 6) Stepbutt
- 7) Butt 2 Core
- 8) Butt 3 Core
- 9) Gapped Core
- 10) Uncut Core
- 11) Dee Core
- 12) Octagonal Core (Toroid approximation)
- 13) Straight Laminations

