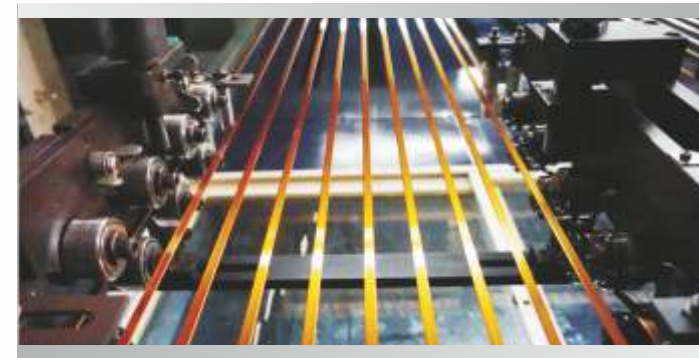
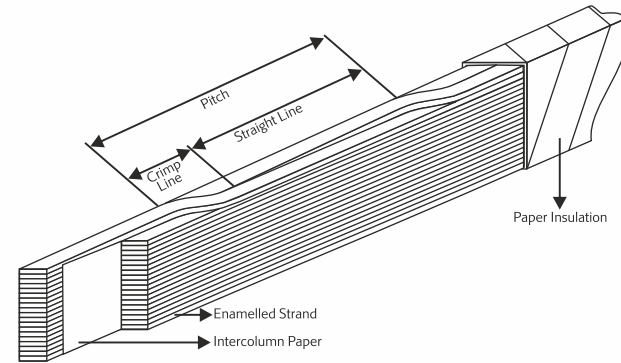


Product Description

Continuously Transposed cables (CTC) are special magnetic wires made up of multiple stranded rectangular copper conductors, which are individually enamelled, transposed continuously, and insulated by covering with electrical grade paper or netting tape.

Advantages of using CTC in Transformer Design

- ✘ Lower costs due to reduction in copper used
- ✘ Reduced winding time thereby increasing productivity for transformer manufacturers
- ✘ Deliver greater electric efficiency by minimizing load losses
- ✘ Improved cooling of the conductor due to the improved heat dissipation
- ✘ Improving mechanical strength of the windings due to the composite construction of the transposed conductors
- ✘ Transformer size becomes smaller thereby reducing the overall cost of the transformer



Enamelling Line



Transposing Head

Production Scope (CTC)

- ✘ Number of Strands: 5 - 79
- ✘ Width of Individual Strands: 3 mm - 12.5 mm
- ✘ Thickness of individual Strands: 0.9 mm - 3.2 mm
- ✘ Paper Insulation Increase: maximum 24 layers (3.60 mm)
- ✘ Pitch: min 36 mm - max 200 mm

Work Hardened Copper (Controlled Proof Stress) can be produced according to BS 1432 (CPR Rp 0.1% designation or Rp 0.2%).

Controlled Proof Stress Copper	Rp (0.2%) MPa	Controlled Proof Stress Copper BS 1432	Rp (0.2%) MPa
Annealed	80-110	CPR1	140 - 200
CPR-A	90 - 120	CPR2	170 - 220
CPR-B	120 - 150	CPR3	220 - 260

Production Scope (Enamelled)

Individual Enamelled Strands with Polyvinyl Acetal Enamel (PVA 120 Class) + Bondable Epoxy Resin.

Designation	Type of Enamel	Grade	Increase in Dimensions (mm)
PVA - POLY VINYL ACETAL	Polyvinyl Formal Resins	1	0.10 ± 0.02
		2	0.14 ± 0.03
PVA - POLY VINYL ACETAL + Epoxy	Polyvinylformal + B Stage Epoxy Resins	1	0.17 ± 0.03
		2	0.19 ± 0.03
Dual Coat 200	Polyesterimide + Polyamide Imide Resins	1	0.11 ± 0.02
		2	0.14 ± 0.03

*** Movable dies used to coat the strands

Benefits of Epoxy coating

- ✘ Reduction of risks of short circuiting
- ✘ Exceptionally strong bond strength in the winding
- ✘ Epoxy resin cures in the same thermal treatment for drying paper (100-120°C)
- ✘ Better insulation of each single strip
- ✘ Conductors in the winding become like a solid beam and can withstand strong electrodynamic stresses created during short circuit testing
- ✘ Small thickness of coating needed in order to achieve very strong bonding (0.02-0.06 mm) Improves the windability of the CTC
- ✘ No-pollution, because the B-stage resin does not contain residue of harmful solvents

Epoxy is a thermosetting resin. Enamelled wires are covered by a thin layer of epoxy tack. The Epoxy system is characterized by the following properties.

- ✘ Uniform melting
- ✘ High grade curing
- ✘ Stability of B-stage (more than 6 months at 32°C)
- ✘ Suitable for the insulation system of oil transformers

Insulation Options of CTC

- ✘ Kraft Paper
- ✘ Thermally Upgraded Paper
- ✘ High Density Micro Crepe (Dennison / Cindus)
- ✘ Nomex®410
- ✘ Special Paper as per customer requirements
- ✘ Netting Tape

Paper Makes

- ✘ Weidmann - USA
- ✘ Munksjo - Sweden
- ✘ Nordic / Amotfors - Sweden
- ✘ Dupont - USA
- ✘ Pucaro - Germany
- ✘ Cindus - USA
- ✘ Tervakoski - Finland

Other Options

- ✘ CTC with short pitches thereby increasing flexibility and windability of cable
- ✘ Inter-column separator can be provided
- ✘ Returnable Reels

Dust Free Manufacturing Facility



Stringent Quality Assurance

