UNIQUE GREEN ENERGY TECHNOLOGIES (P) LTD

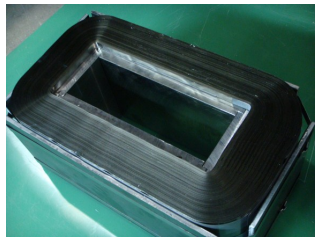
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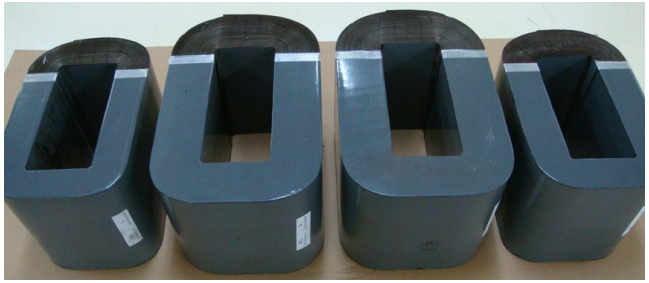
U-GET
ULTRA EFFICIENT TRANSFORMER CORES

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AMORPHOUS CORES FOR DISTRIBUTION TRANSFORMERS







AMORPHOUS METAL (Fe-based) CORES

UGET produces high quality amorphous distributed gap (wound) cores according to customer specification for single phase and three phases distribution transformer applications by using Metglas amorphous metal under technology license from Metglas Incuse, a fully owned subsidiary of HITACHI METALS. Epoxy coating is applied to the some parts of the cores in order to get mechanical rigidity. Currently we are the only manufacturer of amorphous metal core loops authorized by Hitachi metals India (P) Ltd for sale of Amorphous core loops in India.

ADVANTAGES OF AMORPHOUS:

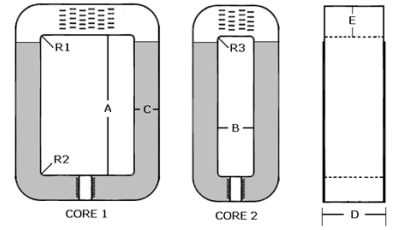
1. Easy magnetization occurs by means of ;
   -low coercivity , low hysteresis loss , high permeability.
2. Low magnetic losses occurs by means of ;
   -low coercivity , low eddy current loss , high permeability , high resistivity.
3. Fast flux reversal occurs by means of ;
   -low magnetic loss.
4. Best performance under harmonics (Non Linear Loads).
5. Less temperature rise of core.
6. Reduction in fossil fuel consumption.

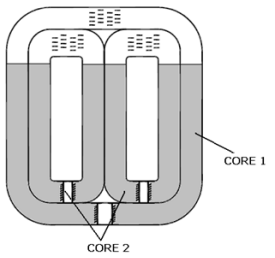
Core losses have two components, one is eddy current losses, and the other is hysteresis losses. The ratios of the losses are mentioned at table below.

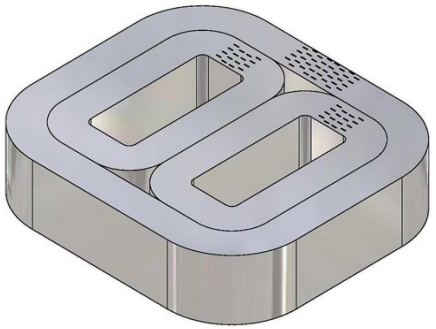
	Amorphous Core		CRGO Cores	
	Eddy Current Losses	Hysteresis Losses	Eddy Current Losses	Hysteresis Losses
Linear Loads	33%	67%	67%	33%
Non Linear Loads	1,3 x Linear loads		1,8 x Linear loads	

No load loss (hysteresis loss and eddy current loss) of transformer can be decreased by using amorphous metal because of atomic structure and thickness of amorphous metal Higher efficiency can be achieved and CO2 emissions can be reduced by saving energy. Typically No load losses of Amorphous Transformers are 1/3rd of conventional CRGO Transformers.

3 PHASE – 3 LIMBS TRANSFORMER CORE GROUP



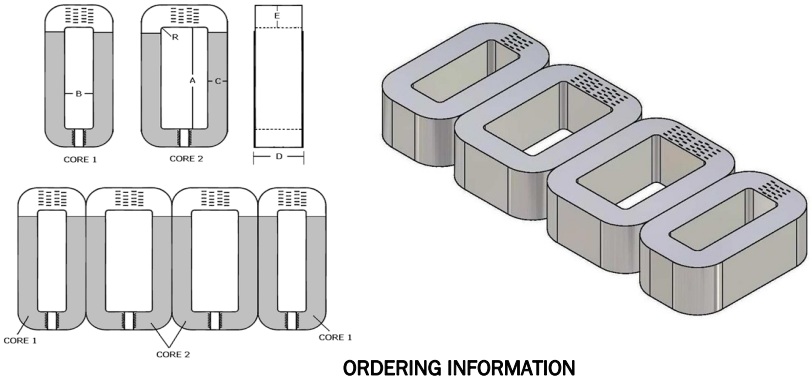




ORDERING INFORMATION

TEST CONDITIONS		
Power	(kVA)	
Frequency	(Hz)	
TEST Voltage per turn	(V/turn)	
Maximum core loss	(W)	
Induction	(T)	

3 PHASE – 5 LIMBS TRANSFORMER CORE GROUP

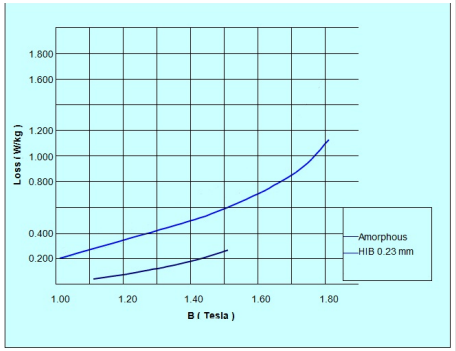


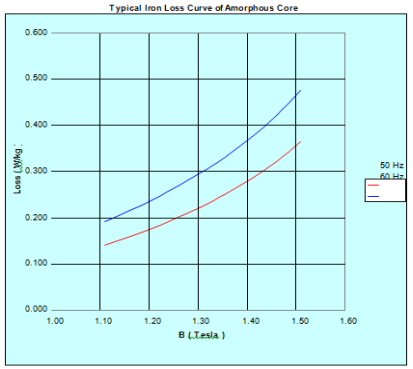
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Maximum core loss	(W)	
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MECHANICAL PROPERTIES				
		TOLERANCES	CORE 1	CORE 2
Ribbon Width	(mm)			
Window Height	A (mm)	+ 3 / - 0		
Window Width	B (mm)	+ 3 / - 0		
Core Build	C (mm)	Maximum		
Core Width + Cover Width	D (mm)	Maximum		
Joint Build	E (mm)	1,25 x C		
Window Corner Radius	R (mm)	± 1.5		
Core Net Area	(cm^2)	Minimum		
Unit Weight	(kg)	Minimum		
Quantity	(pcs)	-		
Total Weight	(kg)	Minimum		

MAGNETIC PERFORMANCE





The losses due to induction in the cores produced with various transformers sheet .

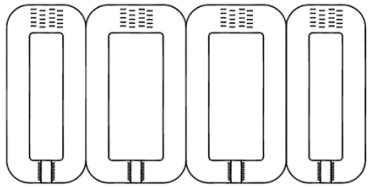
MATERIAL CHARACTERISTICS

The material characteristics of amorphous alloy are mentioned at below table.

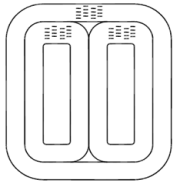
BASIC PARAMETERS	AMORPHOUS METAL MATERIAL
Strip Thickness (mm)	0.025
Density (gr/cm^3)	7.18
Lamination Factor	0.18
Saturation Induction - Bs (Tesla)	1.56
Typical Core Loss (50 Hz, 1,3 T) (W/kg)	0.20-0.30
Standard widths (mm)	3 widths ; (142; 170; 213)
Supply type	Band

CORE PRODUCTION

Wound core (distributed gap core) technology uses one with/core. This results in a rectangular cross section of the core. The pictures below are showing different design of cores. Single phase and 3 phase cores.



3 phase 5 limbs transformers core group



3 phase 3 limbs transformer core group





Some samples for single phase transformer cores





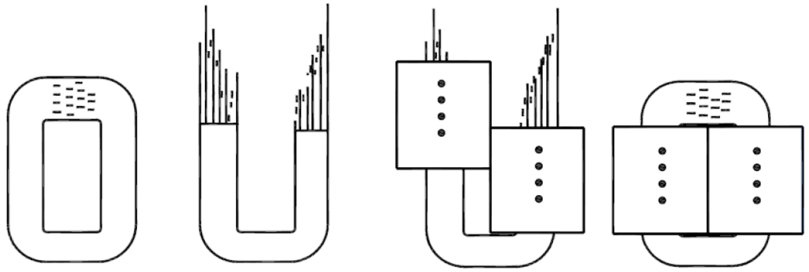
Some samples for 3 phase, 3,5 limbs transformer cores



Production line of AMDT Cores

COILS And ASSEMBLE

In order to assemble the active part, rectangular shaped coils have to be used. LV side is preferred to use foil winding, HV side is wire winding.



The picture above shows opening the upper yoke of the core, settling the winding bobbins and closing the upper yoke of the cores.