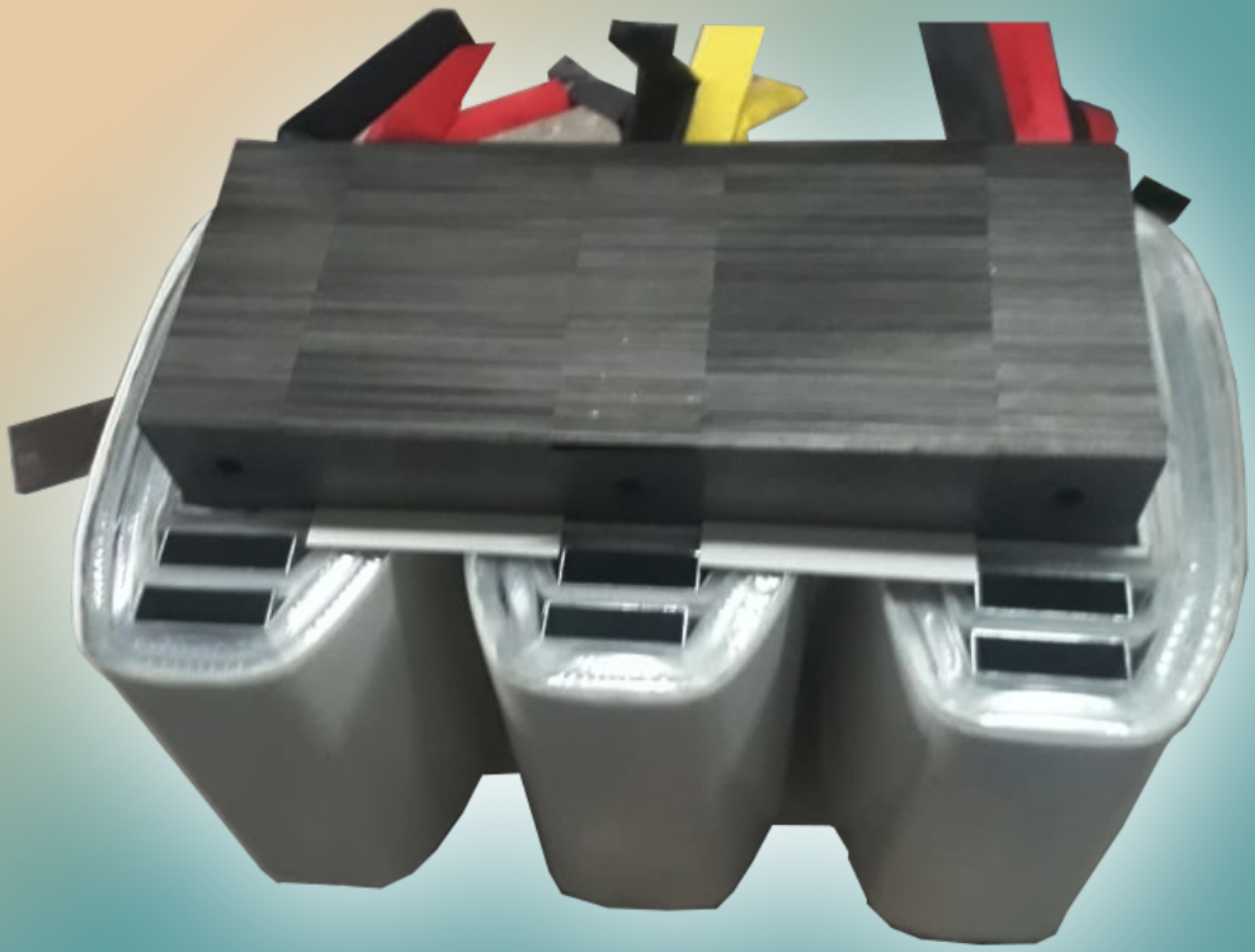
"FAIL-PROOF" TRANSFORMER *for* IT / ITES *sites*



FeeFo
Electro Products Pvt Ltd

Isolation & Ultra Isolation | Auto Transformer | K-Rated Transformer

LightingTransformer | LT & HT Transformer | Fire-Rated Transformer

FAIL-PROOF TRANSFORMER IS ...

- *runs > 30 % cooler (in the winding) compared to other regular types*
- *easily > 30 % smaller / compact size compared to others*
- *50 % longer service life Vs. others*
- *higher efficiency (atleast 3 to 5 %) to other regular types*
- *regular K1 is equivalent to others K7 Rated transformer*
- *works after immersion in water (after complete dry out)*
- *air-cooled upto 600 KVA - without any derating problems*
- *even AIR-COOLED types does not get affected in oil-rich-air in CNC Shop floor*
- *needs 20 % lesser Oil (for Oil Cooled Transformer type)*
- *pricing is equally same as others transformers of same KVA (fully rated)*

FeeFo Transformers is a product of more than 30 years of design, base material selection, and using CNC machine manufacturing.

Generally OTHER conventional transformers, are prone to sudden failure due to - inadequate design, the built-up heat is not let out properly, prone to air-gap & hot-spot, compromised core, winding & insulation material, skinning effect due to harmonics etc ....

R & D

*FEEFO was mainly the **R&D wing for our Power Conditioning Mfg Wing, earlier, and now included all into-one umbrella.***
R&D efforts includes - Foil based Transformers, Metal-Bar Variac Servo Stabilisers, Fire-Rated Transformers (no insulation material), Green Motor, Flywheel based power backup solutions (for UPS, Inverter applications) for 1-phase products.
More technologies are in the pipeline.

Patents

Patenting (applied, and waiting) for Metal-Bar Variac based Servo Stabilisers, and, Fire-Rated Transformers (based on Foil Winding) are the ones which are getting ready for Launch soon.
Metal-Bar Variac based Stabilisers aids in Very Fast Voltage Correction with much higher reliability.
Fire-Rated Transformers (LT & HT) aids in higher class of Insulation (upto 400 Deg C) at contemporary pricing and with a longer service life with no / less maintenance.
More in the coming months.

Innovation

Synergised - R&D, Design, - creates a plethora of products with high efficient, high performance, high efficient, long service life, low maintenance.
These new products will aid in more comprehensive solutions for design & implementation - for Electrical Consultants, Electrical Distribution Providers, Electrical Contractors and almost all users of Power.

Manufacturing

Contemporary products in Power Conditioning - Isolation Transformer, K-Rated Transformers, Current Transformer, Auto-Transformer, Servo Stabiliser, are the main products.
New Products being introduced - Foil Wound Isolation Transformer, Variac-less Servo Stabilisers, Fire-Rated (upto 400 Deg C), and Distribution Transformer - with Fire Rated Technologies very shortly. We use CNC Foil Winding Machines of our own design - for winding and coating the foil for Insulation to stand 400 Deg C. All these will comply to international standards, and, aggressively priced.

- ***suitable to IT / ITES sites - air-cooled (upto 600 KVA) - low weight / mtr^2***
- ***suitable to cutting-oil vapour rich CNC shop floors - even air cooled Iso Tx.***
- ***suitable to Critical Health-Care / Medical Equipments - 24 x 7 operation***
- ***suitable to ships / other defence systems - mainly due to "FAIL-PROOF"***
- ***suitable to highly harmonic polluted sites - due to less skin-effect***
- ***suitable to hot zones - due to easy heat dissipation***

- *compact size*
- *lower CAPEX*
- *Air-Cooled upto 600 KVA*
- *lower termperature in windings*
- *does not get derated due to heat buildup in winding*
- *not affected by skinning effect*
- *tolerates better in harmonics rich environment*
- *does not get affected in oil-rich AIR in CNC machine shop floors*

for IT / ITES sites

our FP Transformer - 24/7 working, low weight, compact size, safety, high efficiency, no harmonics "skin effect"

IT / ITES Requirement	Feefo "FP" Transformer	Benefits
"**Fail-Proof**" product	FP Transformers are **fail-proof – by – design**, components, manufacturing. Almost all the points of failure is avoided, to make it fully reliable.	Near to 100 % **reliable and always performing**
Compact - Size	FP transformers – **occupies very less space**, due to use of Foil, and Polymer Insulation, easily 20 to 30 % smaller size.	Costly space saved, lower space to be cooled, **savings in CAPEX & OPEX**
Weight (< 400 kgs / mtr^2)	Due to compact size, and AIR-COOLED upto 600 KVA, can easily satisfy the weight constraint	**No additional CAPEX** – for making frames, and faster deployment
No OIL-COOLED (Safety reasons)	Mostly, IT/ITES sites require **non-inflammable materials based Products**. Our AIR-COOLED FP Transformers (upto 600 KVA) can function 24 / 7	**Fully Safe**, and satisfies Data Centre / IT room specification
High Efficiency	Since FP Transformers can operate 24/7, and also it **dissipates winding heat faster**, the transformer as whole operates at a higher efficiency, since heat does not get stuck in between the layers.	**Lower OPEX**
Withstand Harmonic Effect - heating	FP Transformers – as design & component (Foil) **does not suffer from "SKIN-EFFECT"** at all. So chance of premature failure, and no derating of capacity due to heat from Harmonic Effect	Suits seamlessly to Harmonic Polluted sites too. **Our K1 FP transformer is equivalent to K7 of others.**
Lower CAPEX	Our FP Transformer (using Foil) is comparable to Copper Wound Transformer (there is a 2 %) variation in efficiency only. But at almost 50 % of the costing, at the same out-performs other aluminium wire-wound transformers.	**Easily 50 % cheaper CAPEX compared to Copper-Wire-Wound Tranformer**

- *IT & ITES sites really need equipments which ensures high reliability, high performance, high efficiency - by Design, Components, Technology*
- *The CAPEX ensures all components of the above to be included, and expected to be compatible for overall reliable, scalable, sustainable and high recoverable (after disaster) environment*
- *Most of the IT / ITES components - emits harmonics, or, affected by harmonics - individually*

- *Though UPS, PF Correction, Harmonic Conditioners are installed at the DB, they do not protect rack-wise components (from the input of the rack PDU)*
- *Harmonics generated from one component affects the others, when branched out (before the respective DB)*
- *Criteria imposed on sites are - Weight per sq mtrs - typically < 400 Kgs / Mt2*
- *Inflammable materials like (Oil, Petrol, Diesel etc) are not allowed inside the premises*

functionals

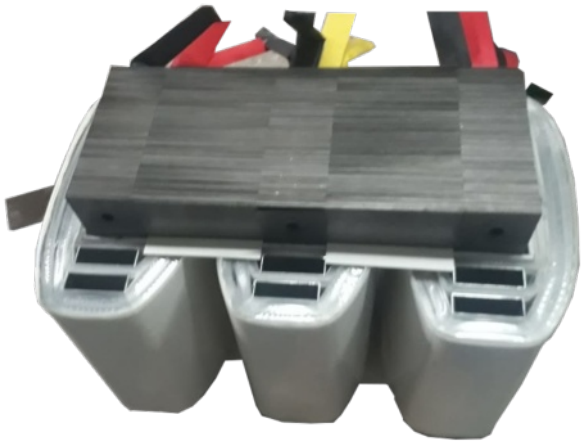
basic design, components and uses

Aluminium Foil

- *thin & wide surface area*
- *fast heat dissipation*
- *no "skin effect"*
- *K1 is equivalent to others K7 Rated*
- *built-in Heat Sink*
- *compact, & lower weight / sq mtr*
- *needs lesser oil (for oil-cooled)*
- *no "air-gap", so no "hot-spot"*

Polyester Foil

- *thin & wider surface*
- *non-absorbing (water / oil)*
- *even if dipped in water - transformer works (after drying)*
- *to suit various class ratings*
- *homogenous & compact size*
- *air-tight finish*



- *Our FP Transformers (Foil Wound) can work even after dipped in the water (after drying) - since the polyester film (instead of paper based insulaltion material - used in contemporary wire-wound transformer) does not absorb water and does not get damaged. This is a valid solution for any DRS centre*
- *Heat generated due to Harmonics "Skin-Effect" does not affect our FP Transformers, since there is almost no skin, and the entire conductor conducts electricity due to wider area & thin (50 to 300 microns thick)*
- *And due to wider area and continuous from beginning to end - the heat generated even in the inner windings get continuously deseminated through the outer windings - continuously*
- *Further, FP Transformers by design, can have in-built Heat-Sink, augmenting heat desimination, continuously.*

Technical Specification - FP (Fail-Proof) Transformer

Parameter	Isolation Transformer	Ultra Isolation Transformer	K-Rated Transformer
Air Cooled	**1 to 500 KVA**	**1 to 500 KVA**	**1 to 500 KVA**
Oil Cooled	**5 to 2,000 KVA**	**5 to 2,000 KVA**	**5 to 2,000 KVA**
Type of Rating	**K1**	**K1**	**K4, K7, K10, K13 & K20**
Neutral Capacity	Single	Single	Double
Duty Cycle	Continuous		
Type	**1:1 / Step UP / Step Down / Single Phase**		
Winding Type	Delta / Star (others against order)		
Voltage Radiation	Consistent throughout the winding (2.5 to 5 Volts) compared to others 30 to 40 Volts		
Air-Gap	Nil, by design – as there is no gap between consecutive windings & insulation material		
Hot-Spot	Nil, by design, as there is no chance of air-gaps throughout its service life		
Skin-Effect	Nil. As there is no skin in the conducting material, the entire conductor conducts electricity, and prevents any heat build-up due to harmonics		
Winding Material	Aluminium Foil		
Insulation	Polyester (non absorbing – oil / water / cutting oil etc)		
Output Regulation	2 ~ 4 % (0.8 ~ 1 PF)		
Operating Freq	50 Hz ± 3 Hz		
Operating PF	0.75 lagging to leading 0.75		
Dielectric Strength	**5 KV, 50 Hz for 1 minute**, ***compared to others (2.5 KV) – DOUBLE THE STRENGTH***		
Coupling Capacitance	0.1 Pico Farad	0.001 Pica Farads	0.1 Pico Farad
Galvanic Insulation	> 500 M Ω	> 1,000 M Ω	> 500 M Ω
Noise Attenuation	100 DB upto 10 kHz	120 dB upto 10 kHz 70 dB for 10 ~ 50 kHz 50 dB for 50 kHz to 1 MHz	100 DB upto 10 kHz
Inter-Winding Shielding	Not needed	At Primary & Secondary	Not Needed
Line Leakage Current	< 20 Micro Ω	< 20 Micro Ω	< 20 Micro Ω
Class of Insulation	**Std Class F**, **Optional** H / C / others		
Efficiency	> 98 %		
Indications	LED, LCD Optional. WiFi Optional		
Optional	MCCB, SPD, Spike & RFI Filter, Auto / Manual Soft-Start, Auto / Manual Bypass		
IP Standards	Std IP20, others against orders		
Construction	Rugged, with Castor Wheels		
Operating Temperature	0 to 45° C		
Standards Compliance	IS-2026, IS-11171		
Colour	Std – Orange with Beige, others against request		

FeeFo
Electro Products Pvt Ltd

Works : 2, 3rd Cross Street, Singaravelan Road, Neelankarai, Chennai – 600 041.
Regd Office : Flat No 6, Crescent Hall Apartments, No. 8 & 9, Halls Road, Egmore, Chennai – 600008.
Phone : 044-42719589
Mail : info@feefoelectroproducts.com
URL : www.feefoelectroproducts.com