

ENERGIZING THE POWER SECTOR

A Joint Venture With THAI MAXWELL ELECTRIC CO. LTD / THAILAND



PROWESS
ENGINEERING PVT LTD

your partner for transformer finwalls

INTRODUCTION

Established in 2009, Prowess Engineering Private Limited is the leading manufacturer of Corrugated Wall Panels / Fin Wall type of radiators in India. Prowess Engineering is one of the first few companies in India to set up fully automated Corrugation lines (2 lines) to serve various Transformer OEMs catering to the Power & Distribution Transformer Industry.

In the year 2009, PEPL formed a joint venture alliance with Thai Maxwell Electric Company Limited from Thailand (TME). PEPL's joint venture with TME, one of Thailand's leading electric power products and pneumatic products manufacturers, strengthens and enhances our expertise through technical and management collaboration.

The product lines of Prowess are
MS Corrugated Wall Panels / Fin Walls for Distribution and Power Transformers, and MS Corrugated Transformer Tanks.

The products manufactured by Prowess adhere to the most stringent standards in manufacturing and quality. PEPL has qualified personnel's who have had rich experience working with some of the leading engineering companies in India.





BRIEF ON MS CORRUGATED WALL PANELS AND TANKS FOR DISTRIBUTION TRANSFORMER

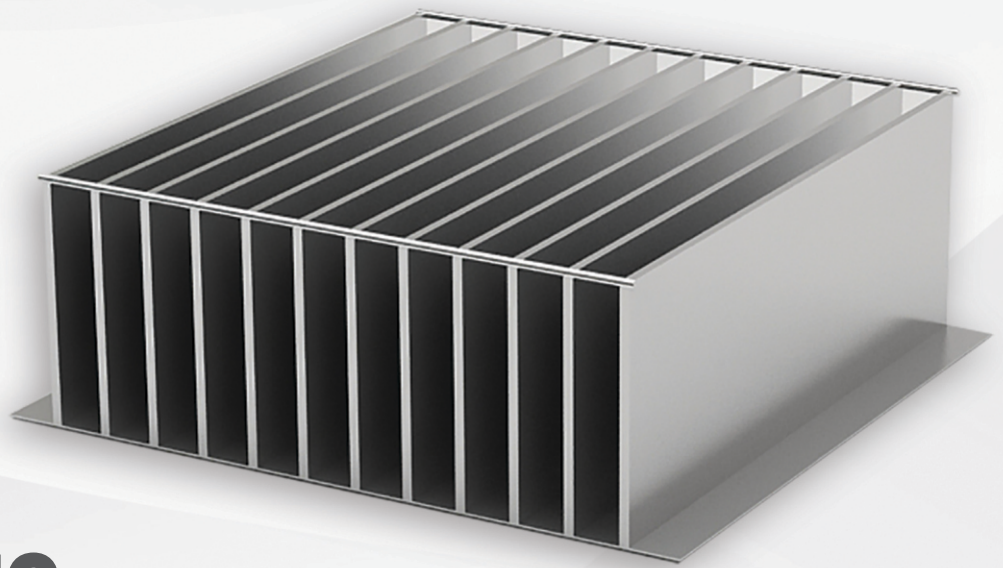
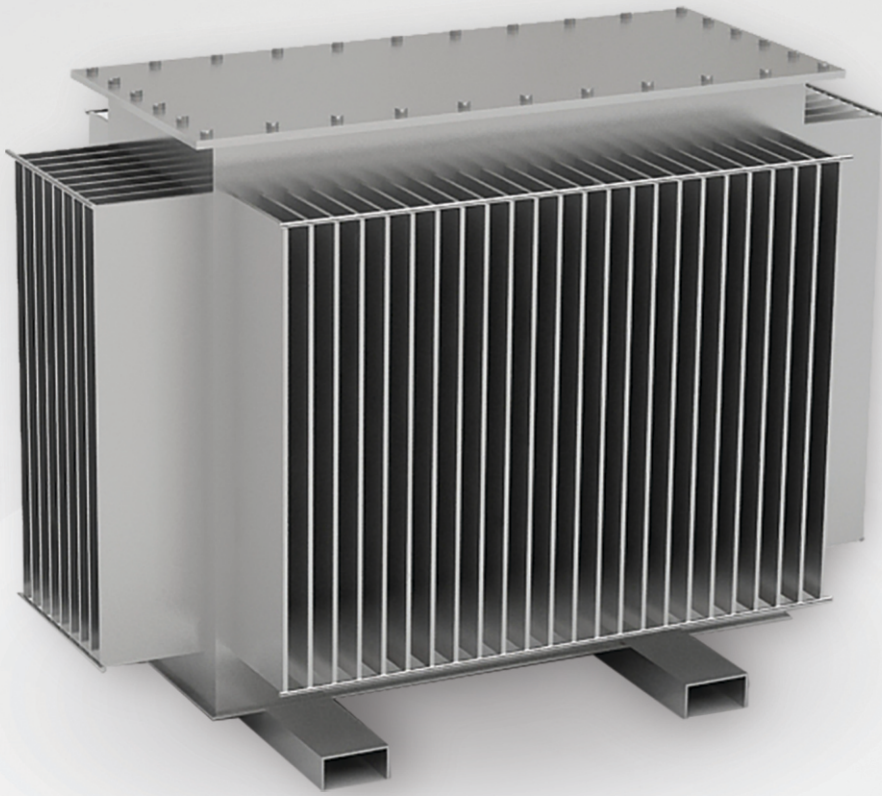
MS Corrugated Wall Panels (Finwalls) has substituted the use of traditional transformer tanks that with radiator. It serves as a tank body which acts as an excellent Heat Exchanger. The use of wall panel in transformer tanks reduces total weight of the tank by 30 %, making it lighter for handling and transport. It reduces the assembly / manufacturing time of the tank.

The numbers of welded joints are reduced, thereby, less chances of leakages. The significant advantage of the wall panel is reduced tank size at reduced oil capacity and higher size transformer rating.

The heart of the machine is a hydraulic fin folding unit, which can be programmed for specified widths and lengths, with varying corrugation depths. The production is continuous, starting with cold-rolled steel strips decoiled from rolls loaded on an expanding mandrel. Spot-welding of the embossed sides gives extra strength to the sides (optional). Since the panels are manufactured on CNC controlled machines, the accuracy and repeatability is maintained.

The fin edges are welded simultaneously on a machine, by TIG process and are further checked on a stroboscope light or Dye Penetrant test for leak proof. The panels are further coated / treated with chemical for rust prevention. The corrugated walls are then assembled into tanks by welding these to the upper and lower frames.

At our fabrication shop, we manufacture corrugated tanks of different constructions such as hermetically sealed, conservator type, OLTC type, dry type, etc for some of the reputed transformer manufacturers In India and overseas. We also assist our customers in the design of the corrugated tanks, giving them a complete solution suiting their requirements.



FEATURES

1



High Efficiency Cooling

4



Less Oil Required

2



Strong Construction

5



Less Steel Used

3



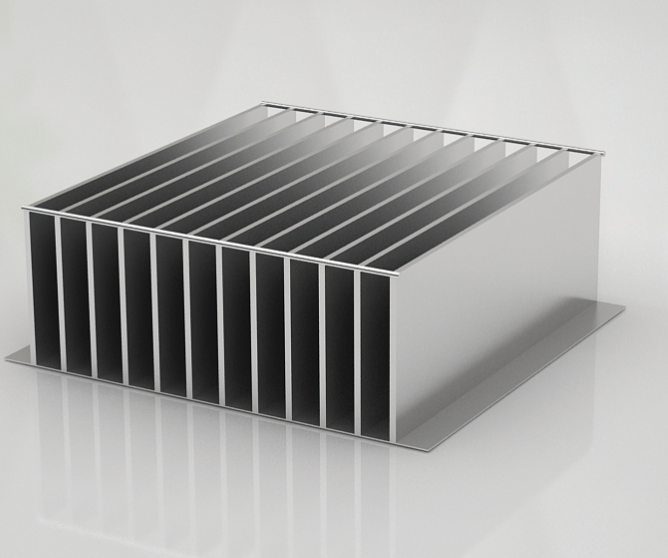
Smaller Footprint

6



Cost Effective

MS CORRUGATED WALL PANEL / TRANSFORMER FIN WALLS/ FIN WALL TYPE RADIATOR



The corrugated wall panel / fin walls are directly welded to the transformer tank. Besides the obvious advantage of reduction on the overall dimension of the transformers, the thermo power wastage is lower and the flow of oil does not become sluggish hence the efficiency of the radiators is better. This in the long term improves the usable life of the transformer and maintenance cost is lowered.

GENERAL

Finwalls are designed to be used in the transformer tanks up to 10 MVA to let the cool fluid to complete a circulation pattern and to be cooled by transferring heat through the fins to the ambient air.

MATERIAL

Cold rolled steel according to EN 10130 / IS 513

EDGE BENDING

45 ° & 90 Degree Upward & Downward

FIN WIDTH

400 mm to 1600 mm

EMBOSSING

Available upon customer request

FIN DEPTH

50 mm to 400 mm

SPOT WELDING

Available upon customer request

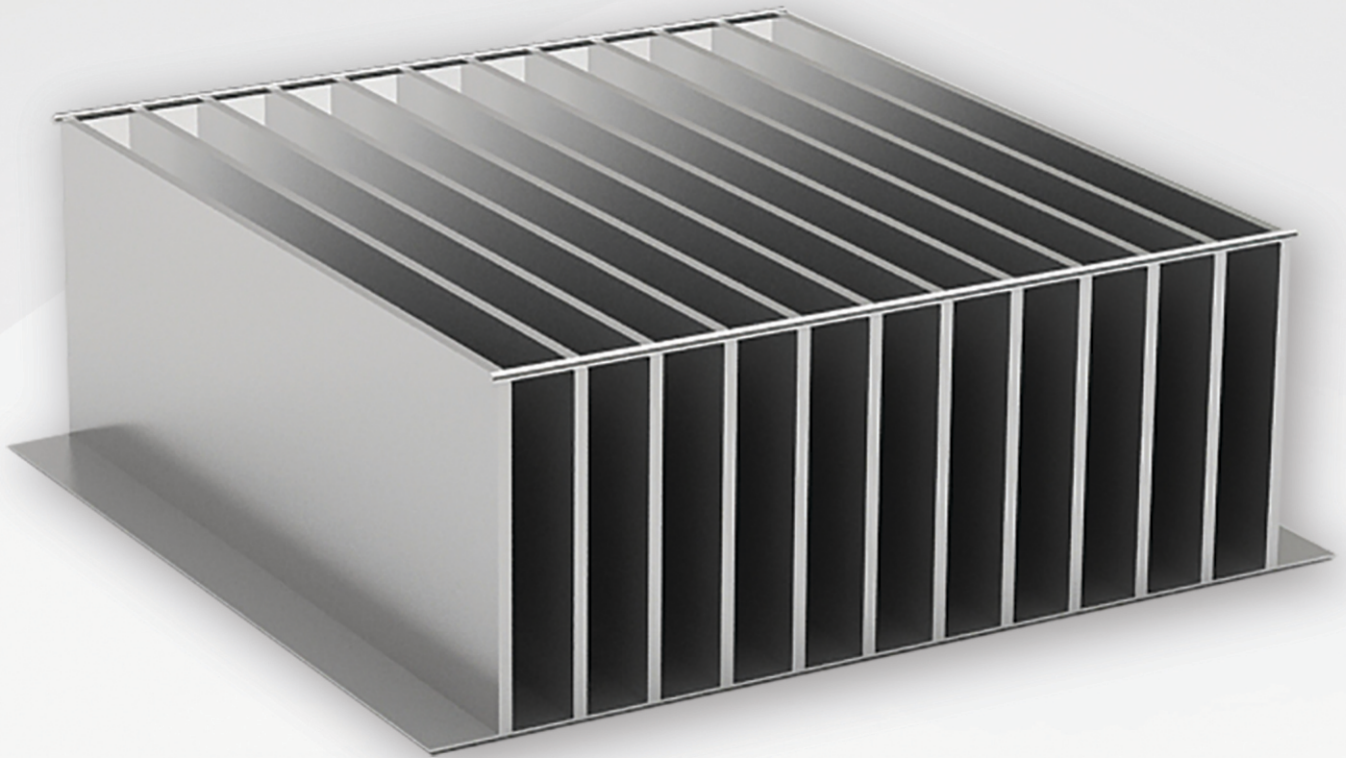
STIFFENER

Available in $\Phi 8$ mm & $\Phi 10$ mm

QUALITY

Leakage control by UV light against dye penetrant





ADVANTAGES

1

Potential for saving in materials- Reduction

> 30%

2

Reduction in the weight of the radiators - Reduction

> 30%

3

Reduction in the overall dimension of the - About volumetric reductions.

50%

MS CORRUGATED / FIN WALL TANKS & COVERS

Fin wall tanks are manufactured according to customer designs and relevant welding procedures.

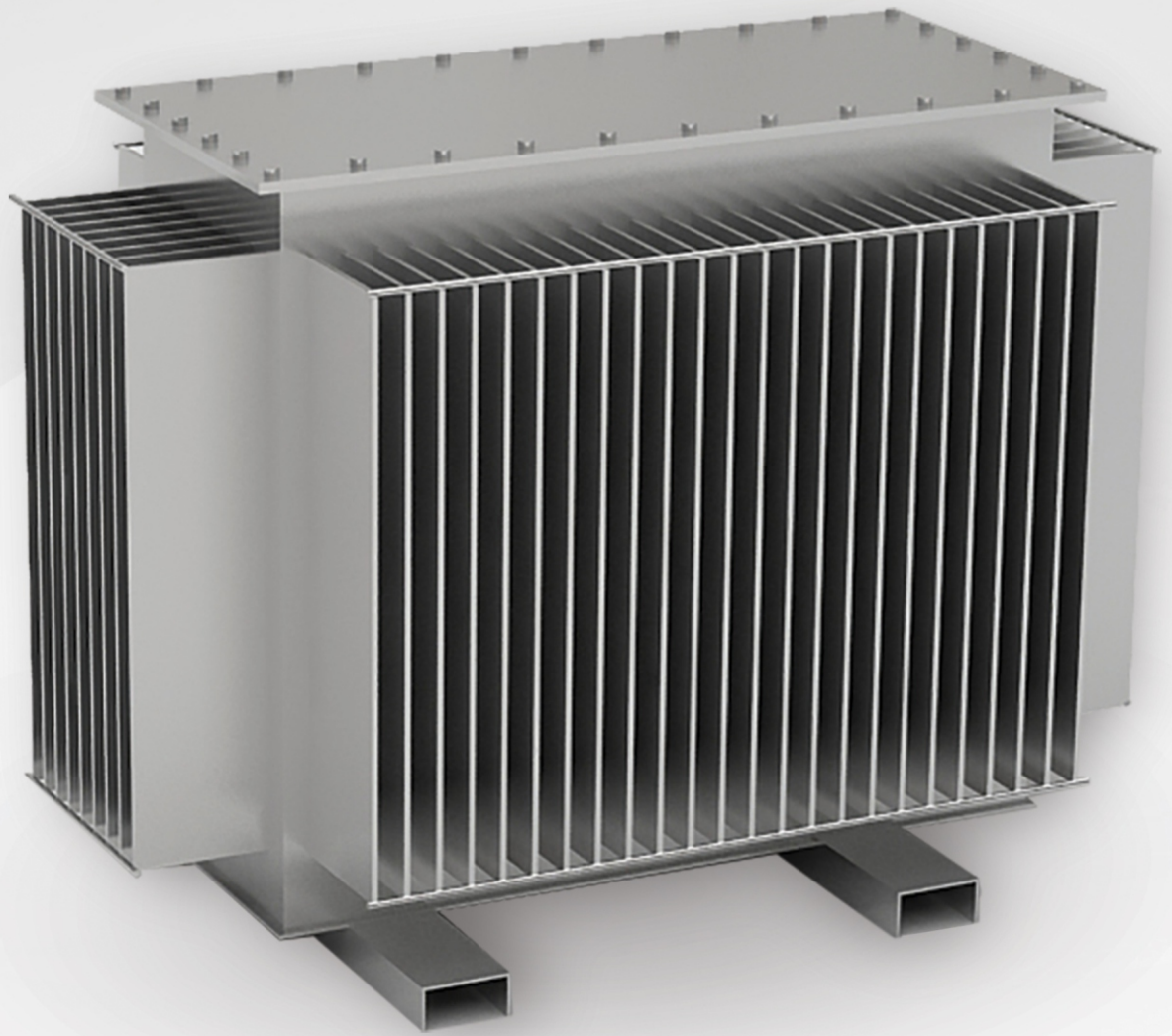
- Maximum fin height is 1600 mm.
- Maximum dimensions are 4000 mm x 4000 mm x 4000 mm.
- Maximum total weight is 7500 Kg.

ADVANTAGES







- Compact in size - Transformers with corrugated walls are smaller than transformers with radiators.
- Improved heat dissipation - the role of fins is to increase the surface of the tank, which is in contact with the cooling air. Due to the temperature rise of the windings under load, the oil temperature also rises. The hot oil rises, meets the top cover and goes down into the fins where it is cooled by the air rising up between the fins. Required heat dissipation can be achieved by varying the number of corrugations and the depths height of corrugations.
- Due to vertical Oil Channel greater stability is achieved.
- The fins have sufficient degree of elasticity to absorb the expansion in volume of the liquid, due to the heating of the cooling medium at the same time it provides for a larger dissipating surface to cool the same medium.
- No blockage of oil flow into the fins. Blockage of oil is possible in pressed steel type radiator due to possible closing of header pipe connection on the tank wall, unlike corrugated tanks.
- Oil cleaning is easier and economical.
- Atheistic Appeal is higher than the traditional transformer tank.
- The Transportation cost is lower due to reduction in weight and overall dimensions.
- The requirement of space for installation of the Transformer is lower

QUALITY ASSURANCE & TESTING

PEPL corrugated tanks are manufactured to stringent specifications, with quality assurance procedures in place at every stage. Each tank is subjected to visual controls, tightness and leakage test under pressure according to customer specifications to avoid any oil leakage of the transformer.

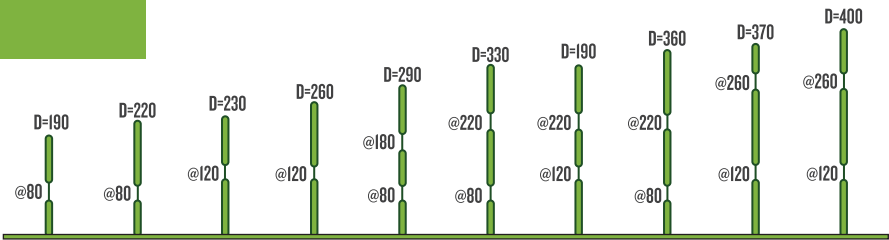


FEATURES

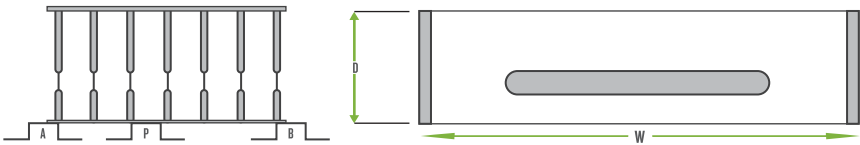
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|---|-------------------------------------------------------------------------------------------------------------|---|---------------------------------------------------------------------------------------------------------|
| 1 |  High Efficiency Cooling | 4 |  Less Oil Required |
| 2 |  Strong Construction | 5 |  Less Steel Used |
| 3 |  Smaller Footprint | 6 |  Cost Effective |

TECHNICAL DETAILS FOR CORRUGATED WALL PANELS / FINWALLS

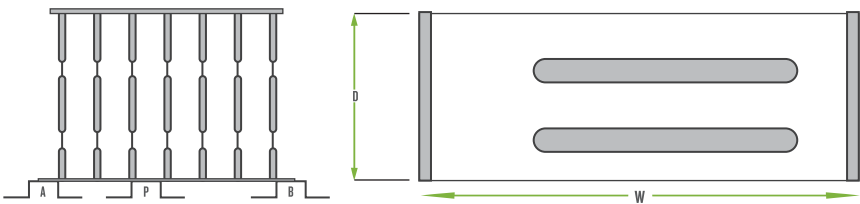
POSITION OF EMBOSSING



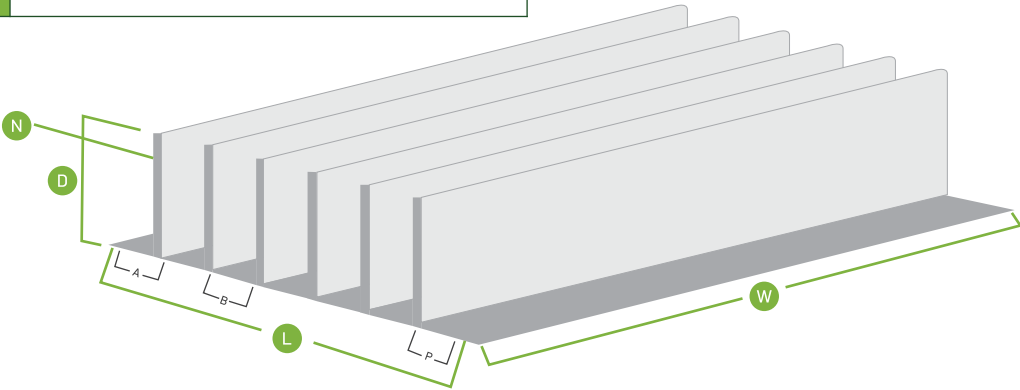
TYPE- A (SINGLE EMBOSSING)



TYPE- B (DOUBLE EMBOSSING)



DESCRIPTION	CODE	SPECIFICATION
WIDTH OF PANEL	W	400 - 1600
THICKNESS OF CRCA / FIN PANEL	T	1.00 - 1.50
PITCH(CENTER DISTANCE BETWEEN TWO FINS)	P	40 TO 100 (MULTIPLE OF 5)
OIL DUCT INSIDE FIN	O	6 TO 7
NO. OF FINS	N	01 TO 99 NOS.
TOTAL LENGTH OF PANEL	L	4000 MAX
FIN DEPTH	D	50 TO 400
FRONT EDGE	A	20 MIN
REAR EDGE	B	20 MIN
ALL DIMENSIONS ARE IN MM		



TECHNICAL DETAILS FOR CORRUGATED WALL PANELS / FINWALLS

FINS / CORRUGATED WALLS WITH EMBOSSING (TYPE A & TYPE B)

Fin Width (W)(mm)	Fin Depth (D) (mm)									
	190	220	230	260	280	290	330	360	370	400
400										
500										
600										
700										
800										
900										
1000										
1100										
1200										
1300										
1400										
1500										
1600										

CRCA THICKNESS - CORRUGATED WALLS WITH EMBOSSING

Fin Depth (D) mm	Width (W) of Cold Rolled Steel (mm)												
	400	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600
190	Thickness 1.2									Thickness 1.5			
220													
230													
260													
280													
290													
330													
360													
370													
400													

CRCA THICKNESS - CORRUGATED WALLS WITHOUT EMBOSSING

Fin Depth (D) mm)	Width (W) of Cold Rolled Steel (mm)																	
	400	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600					
50 - 179	Thickness 1.2									Thickness 1.5								
180 - 240																		
241 - 250																		
251 - 280	Thickness 1.5																	
281 - 330																		
331 - 400																		

