



TEGRA ENGINEERS PVT LTD

Best in class radiators for distribution and power transformers



Tegra Engineers Private Limited was founded in mid 2017 and has since been gaining foothold in the industry as a reliable manufacturer of pressed steel radiators for distribution and power transformers.

The manufacturing process is done under tight tolerances using state of the art special purpose machines that deliver repeatability and accuracy reliably.

Our internal stringent quality standards ensure that we achieve customer satisfaction every time.

Our Motto - To offer our customers best in class radiators that stand the test of time, are technically compliant, and

economically viable; keeping quality as our primary objective.





Radiator Design



Header Type Radiator:

Centre to Centre distance

Width

Number of Elements

Pitch

Flutes

Header Pipe

- : 500 mm 3000mm
- : 520mm wide
- : 1 to 35 (can be customize)
- : 50mm
- :24
- :80NB ERW (IS1239 Pt. 1)



Swan Neck Type Radiator:

Centre to Centre distance Width Number of Elements Pitch Flutes Header Pipe

- : 500 mm 3000mm
- : 520mm wide
- : 1 to 35 (can be customized)
- : 50mm
- :24
- :80NB ERW (IS1239 Pt. 1)

Radiator Design



Radiator with Graded Elements:

Centre to Centre distance Width Number of Elements Pitch Flutes Header Pipe

- : 500 mm 3000mm
- : 520mm wide
- : 1 to 35 (Can be customized)
- : 50mm
- :24
- :80NB ERW (IS1239 Pt. 1)





T - **Type** Radiator:

Centre to Centre dista	ance	: 500 mm – 3000mm
Width	: 520mm wide	
Number of Elements : 1 to 35 (Can be customized)		
Pitch	: 50mm	า
-1.	~ 4	

Flutes: 24Header Pipe: 80NE

: 80NB ERW (IS1239 Pt. 1)





Technical Specification – Material and design

Steel

1 or 1.2mm CRCA (Make JSW, Essar, Tata Steel)

Header Pipes

80 NB ERW Pipes

2mm thickness

Pipe notching is done using CNC plasma cutting







Flanges

- MS Flanges 150 x 150mm with mounting holes Ø 18mm at 160mm PCD
- Can be offered in thickness of 14mm, 16mm and 18mm.



Technical specification – Material and Design

Stiffeners

- MS Stiffners for structural rigidity.
- Can be offered in MS Strips of 25 x 6mm or MS rods of Ø 10mm
- Can be customized



Lifting Lugs

- MS Lifting brackets As per IEEMA : TR 25 – DC (2015)
- Up to 17 sections 1 no. lifting lug
- Above 17 sections 2 nos. lifting lugs





Air vent and drain plug

12mm Corrosion resistant Brass forged plugs with 3mm thick Teflon washer.

Process

Surface Treatment

1. Internal Coating

The radiators cleaned with pressurized air are flushed with either Heat and Oil Resistant Varnish or Heat and Oil Resistant white (semi glossy) paint. Any special requirements can be included.

2. External Coating

***** Before Painting

Degreasing and surface roughness of SA 2 ½ (as per SIS 05 5900 / ISO 8501) is achieved by shot blasting

✤ Painting

 2 pack or 3 pack system of PU or Epoxy painting as per customer requirement









- Brands used are Jotun and Berger
- Shades as per customer requirement
- Standard DFT of 80 to 100 microns maintained. Any other customer specific requirement can be achieved.

Process



Inspection

A thorough visual inspection of the radiators for any defects is done by trained professional to ensure that they match set standards. Inspection includes, but not restricted to

- Dimensional inspection
- Leakproof testing at pressure up to 2 kg/cm²
- Internal cleanliness
- Coating thickness
- Final unit inspection

A paint peel off test is done on a batch as per IEEMA : TR 25 – DC with permacel tape to ensure proper drying and adhesion is achieved.

Packing

- The radiators are wrapped in 70 μm clear film and packed in sturdy wooden crates.
- Packing is done in a "two radiators per crate" format.





- The radiators are interlocked by means of bracing straps on corners (Lug to Lug and Flange to Flange) by using fasteners on 25 x 3mm MS Strips
- To dampen shocks and damage in transportation, the wooden batons in between the radiators are wrapped with soft foam. This wooden packing is also locked with the crate to prevent any kind of movement internally.



Services and tests

Services

We can undertake replacement of 520mm width radiators of old transformers and provide new ones with improved corrosion resistance.

Type Test

The product has undergone type test specified according to IEEMA 9 - 1990









Type test certificate

ELECTRICAL RESEARCH AND DEVELOPMENT ASSOCIATION

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E-mail : erda@erda.org

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SHEET 01 OF 04

NAME & ADDRESS OF CUSTOMER: M/s. Tegra Engineers Private Limited	REPORT NO.: RP-2021-012782 DATE : 16/09/2020 CUSTOMER REF. No. & DATED :
Por Ramangamdi Road, Ramangamdi, Dist. Vadodara-391243	Letter dated 10/09/2020 DATE OF WITNESS : 10/09/2020 to 11/09/2020 & 14/09/2020 to 15/09/2020
SAMPLE DESCRIPTION:	SAMPLE IDENTIFICATION:
Pressed Steel Flanged Type Transformer	Marked on the flange : "TE-PV-01"
Identification No.: TE-PV-01	Drawing No.: 4T-TS-01
[Details as mentioned on SHEET 02 OF 04]	WO-2021-004080/01
TEST DETAIL:	TEST SPECIFICATION:
 Verification of dimensions Vacuum test Leak proofness test 	For Test Procedure & Requirement: 1] IEEMA: 9-1990 2] As per customer's requirement

TEST WITNESSED BY:

1] Mr. Vijay Ahire, Assistant Engineer, representative of ERDA, Vadodara.

2] Mr. T A Francis, Technical Head, representative of Tegra Engineers Pvt. Ltd., Vadodara.

ENCLOSURE: Certified Drawing No.: 4T-TS-01

REMARKS:

1] Radiator conforms to the requirement of all above mentioned tests.

2] '#' The result obtained is an average of two readings.

3] Testing was carried out at customer's site (i.e. M/s. Tegra Engineers Private Limited, Vadodara) by using customer's calibrated instruments from NABL Accredited Laboratory. 4] For determination of leakage, routine test [as per Cl. No. 17.2.1 of IEEMA: 9-1990]



- was carried out before & after Leak proofness test and Vacuum test.
- 5] Photographs of sample tested at customer's site have been attached as per SHEET 04 OF 04.



Clients









Voltamp Transformers Limited











Tegra Engineers Pvt. Ltd.

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