

Liquid-Immersed Distribution Transformers Supplemental Total Owning Cost (TOC) Tool:

This spreadsheet is a mockup of a future EPA tool to identify which ENERGY STAR certified liquid-immersed distribution transformers would be best for a given application. Using this tool, purchasers can enter application specifics (capacity factor, size and weight, A and B factors, etc.) and quickly see which model will have the lowest losses and operating costs given their application. This tool will be integrated onto the ENERGY STAR site during the specification development process.

For questions regarding this tool, please contact DistributionTransformers@energystar.gov. For more information on the specification development process, please visit www.energystar.gov/NewSpecs and follow the link for "Version 1.0 Is in Development" under "Transformers".



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ENERGY STAR Distribution Transformers

Enter your application data to receive a list of efficient transformers optimized for your specific need.

Basic Calculator - Fill in any basic information available/applicable specific to purchaser's application.

Capacity (kVA)/Phases

- ☒ 25 kVA 1-phase
- ☐ 50 kVA 1-phase
- ☐ 500 kVA 1-phase
- ☐ 150 kVA 3-phase
- ☐ 1500 kVA 3-phase
- ☐ Custom (Use form at Right)

Capacity Factor/Application (%)

- ☐ 10% Light/Residential
- ☐ 15%
- ☒ 20%
- ☐ 25%
- ☐ 30%
- ☐ 35% National Average
- ☐ 40%
- ☐ 45%
- ☐ 50%
- ☐ 55%
- ☐ 60% Heavy/Industrial
- ☐ 65%
- ☐ 70%

Steel Type

- ☒ M2 Grain Oriented
- ☒ M3 Grain Oriented
- ☒ M4 Grain Oriented
- ☒ M5 Grain Oriented
- ☒ SA1 Amorphous Metal
- ☒ ZMDH Mechanically-scribed

Advanced Calculator: Fill in any further information available/applicable specific to purchaser's application.

Operating Characteristics

Custom Capacity (kVA):

A & B Factors:

A (\$/W):

\$6.00

Custom Number of Phases:

B (\$/W):

\$1.00

Installation Characteristics

Max Weight (lbs):

Max Height (in):

Max Width (in):

Max Depth (in):

Results: The top-rated results show up here after requirements are input to the left.

Top-rated Results

1. D02_C11_F3_A14.00_B3.50

Capacity (kVA):	25	Steel Type:	SA1
Efficiency at 50% Load:	99.35%	Dimensions (in):	11hx20wx20d
Operating Cost at 20% Load:	\$140	Weight (lbs):	559

2. D02_C11_G3_A14.00_B3.00

Capacity (kVA):	25	Steel Type:	SA1
Efficiency at 50% Load:	99.28%	Dimensions (in):	11hx19wx19d
Operating Cost at 20% Load:	\$134	Weight (lbs):	491

3. D02_C11_F2_A5.00_B1.51

Capacity (kVA):	25	Steel Type:	SA1
Efficiency at 50% Load:	99.22%	Dimensions (in):	11hx19wx19d
Operating Cost at 20% Load:	\$128	Weight (lbs):	477

4. D02_C11_F3_A10.00_B2.50

Capacity (kVA):	25	Steel Type:	SA1
Efficiency at 50% Load:	99.24%	Dimensions (in):	11hx19wx19d
Operating Cost at 20% Load:	\$130	Weight (lbs):	494

5. D02_C11_F3_A15.00_B0.94

Capacity (kVA):	25	Steel Type:	SA1
Efficiency at 50% Load:	99.23%	Dimensions (in):	11hx20wx20d
Operating Cost at 20% Load:	\$131	Weight (lbs):	485

6. D02_C11_F3_A10.00_B3.60

Capacity (kVA):	25	Steel Type:	SA1
Efficiency at 50% Load:	99.31%	Dimensions (in):	11hx20wx20d
Operating Cost at 20% Load:	\$141	Weight (lbs):	549

7. D02_C11_F2_A3.00_B1.08

Capacity (kVA):	25	Steel Type:	SA1
Efficiency at 50% Load:	99.22%	Dimensions (in):	11hx19wx19d
Operating Cost at 20% Load:	\$129	Weight (lbs):	487

8. D02_C11_G2_A3.50_B1.60

Capacity (kVA):	25	Steel Type:	SA1
Efficiency at 50% Load:	99.22%	Dimensions (in):	11hx19wx19d
Operating Cost at 20% Load:	\$130	Weight (lbs):	487

[More results](#)

User Interface Inputs

Capacity (kVA)		Number of Phases	
25	1	TRUE	
50	1	FALSE	
500	1	FALSE	
150	3	FALSE	
1500	3	FALSE	
0	0	FALSE	
Custom Capacity ^		Custom Phases ^	
Closest Standard Capacity to Selec First Phase Entry that is TRUE v			
25	1		

Application		Capacity Factor (%)	
Light/Residential	10%	FALSE	
	15%	FALSE	
	20%	TRUE	
	25%	FALSE	
	30%	FALSE	
National Average	35%	FALSE	
	40%	FALSE	
	45%	FALSE	
	50%	FALSE	
	55%	FALSE	
Heavy/Industrial	60%	FALSE	
	65%	FALSE	
	70%	FALSE	
Average	20%		

Steel Type		
Steel Type		
CoreSteelsList	CoreSteelStatuses	UserCoreSteels
M2	TRUE	M2
M3	TRUE	M3
M4	TRUE	M4
M5	TRUE	M5
SA1	TRUE	SA1
ZDMH	TRUE	ZDMH

Max Weight (lbs):	0
Max Height (in):	0
Max Width (in):	0
Max Depth (in):	0

Other Assumptions

Scaling Relationship Exponent for Intermediate Power Values			
1-phase		0.76	DOE Final Rule TSD
2-phase	N/A		Appendix 5B Scaling
3-phase		0.79	DOE Final Rule TSD
			Appendix 5B Scaling

Recommended Transformers Given User-specified Capacity Factor and Other Constraints (List on First Page Pulls Top 10)

Names	Capacities	Phases	CoreSteels	DOEEfficie	OpLosses	OpCosts	Weights	Heights	Widths	Depths
1 D02_C11_F3_	25		1 SA1	99.35%	31	\$140	559	11	20	20
2 D02_C11_G3_	25		1 SA1	99.28%	32	\$134	491	11	19	19
3 D02_C11_F2_	25		1 SA1	99.22%	32	\$128	477	11	19	19
4 D02_C11_F3_	25		1 SA1	99.24%	32	\$130	494	11	19	19
5 D02_C11_F3_	25		1 SA1	99.23%	32	\$131	485	11	20	20
6 D02_C11_F3_	25		1 SA1	99.31%	32	\$141	549	11	20	20
7 D02_C11_F2_	25		1 SA1	99.22%	32	\$129	487	11	19	19
8 D02_C11_G2_	25		1 SA1	99.22%	32	\$130	487	11	19	19
9 D02_C11_F1_	25		1 SA1	99.22%	32	\$131	476	11	19	19
10 D02_C11_G1_	25		1 SA1	99.22%	32	\$130	488	11	19	19
11 D02_C11_F2_	25		1 SA1	99.22%	32	\$130	485	11	19	19
12 D02_C11_F3_	25		1 SA1	99.23%	32	\$131	476	11	19	19
13 D02_C11_G1_	25		1 SA1	99.22%	32	\$130	486	11	19	19
14 D02_C11_G1_	25		1 SA1	99.22%	32	\$130	488	11	19	19
15 D02_C11_F2_	25		1 SA1	99.22%	32	\$131	477	11	19	19
16 D02_C11_F3_	25		1 SA1	99.22%	32	\$131	486	11	19	19
17 D02_C11_F2_	25		1 SA1	99.22%	32	\$130	488	11	19	19
18 D02_C11_F3_	25		1 SA1	99.22%	32	\$132	476	11	19	19
19 D02_C11_G2_	25		1 SA1	99.22%	32	\$131	487	11	19	19
20 D02_C11_G2_	25		1 SA1	99.22%	32	\$131	486	11	19	19
21 D02_C11_G3_	25		1 SA1	99.30%	32	\$141	523	11	20	20
22 D02_C11_G3_	25		1 SA1	99.31%	32	\$142	531	11	20	20
23 D02_C11_F3_	25		1 SA1	99.22%	32	\$131	484	11	19	19
24 D02_C11_F3_	25		1 SA1	99.22%	32	\$131	479	11	19	19
25 D02_C11_G1_	25		1 SA1	99.22%	32	\$131	487	11	19	19
26 D02_C11_G2_	25		1 SA1	99.22%	32	\$131	484	11	19	19
27 D02_C11_G1_	25		1 SA1	99.21%	32	\$131	491	11	19	19
28 D02_C11_F3_	25		1 SA1	99.31%	32	\$143	538	11	20	20
29 D02_C11_F2_	25		1 SA1	99.23%	32	\$132	473	11	19	19
30 D02_C11_F3_	25		1 SA1	99.22%	32	\$132	483	11	19	19
31 D02_C11_F2_	25		1 SA1	99.22%	32	\$132	483	11	19	19
32 D02_C11_F3_	25		1 SA1	99.24%	32	\$134	485	11	19	19
33 D02_C11_F1_	25		1 SA1	99.22%	32	\$132	483	11	19	19
34 D02_C11_G2_	25		1 SA1	99.40%	32	\$154	593	11	20	20
35 D02_C11_F3_	25		1 SA1	99.22%	32	\$132	480	11	19	19
36 D02_C11_G1_	25		1 SA1	99.22%	32	\$132	483	11	19	19
37 D02_C11_G2_	25		1 SA1	99.22%	32	\$132	481	11	19	19
38 D02_C11_F2_	25		1 SA1	99.22%	32	\$132	482	11	19	19
39 D02_C11_F3_	25		1 SA1	99.22%	32	\$133	481	11	19	19
40 D02_C11_G2_	25		1 SA1	99.22%	32	\$133	481	11	19	19
41 D02_C11_F3_	25		1 SA1	99.23%	32	\$133	481	11	19	19
42 D02_C11_F3_	25		1 SA1	99.23%	32	\$134	481	11	19	19
43 D02_C11_F2_	25		1 SA1	99.22%	33	\$132	488	11	19	19
44 D02_C11_G2_	25		1 SA1	99.22%	33	\$133	482	11	19	19
45 D02_C11_F3_	25		1 SA1	99.22%	33	\$133	481	11	19	19
46 D02_C11_F2_	25		1 SA1	99.22%	33	\$133	481	11	19	19
47 D02_C11_F1_	25		1 SA1	99.22%	33	\$133	482	11	19	19
48 D02_C11_G2_	25		1 SA1	99.26%	33	\$137	505	11	20	20
49 D02_C11_G2_	25		1 SA1	99.22%	33	\$133	484	11	19	19
50 D02_C11_F3_	25		1 SA1	99.22%	33	\$133	481	11	19	19