

# CEE HIGH-EFFICIENCY COMMERCIAL AND INDUSTRIAL TRANSFORMERS INITIATIVE

## EFFICIENCY SPECIFICATIONS

(Terms of Usage follow)

CEE specification is equivalent to NEMA standard TP 1-2002

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**Initiative Web page:** <http://www.cee1.org/ind/trnsfm/trnsfm-main.php3>

Low voltage reference conditions: 75 degrees C, RMS load of 35% of nameplate;

Medium voltage reference conditions: 75 degrees C, RMS load of 50% of nameplate

Single Phase Transformers				Three Phase Transformers			
KVA	Low Voltage			kVA	Low Voltage		
	Baseline Efficiency	"energy efficient"	reduction in losses (%)		Baseline Efficiency	"energy efficient"	reduction in losses (%)
15	96.7	97.7	29.4	15	95.7	97	29.4
25	97.2	98.0	29.4	30	96.5	97.5	29.0
37.5	97.3	98.2	33.1	45	97.0	97.7	23.4
50	97.4	98.3	33.7	75	97.3	98	24.7
75	97.8	98.5	30.7	112.5	97.6	98.2	23.5
100	97.9	98.6	33.8	150	97.9	98.3	19.3
167	98.1	98.7	31.5	225	98.1	98.5	19.0
250	98.3	98.8	30.2	300	98.3	98.6	18.1
333	98.3	98.9	34.0	500	98.4	98.7	16.4
500	98.0			750	98.6	98.8	13.0
667	98.3			1000	98.7	98.9	13.1
833	98.4			1500	98.8		
				2000	98.9		
				2500	99.0		

**Note:** CEE "energy-efficient" criteria are identical to NEMA standard TP-1 efficiencies for covered equipment

Baseline = average efficiency sold in market today (Source: ORNL).

The equipment classes in the chart that are shaded each constitute less than 1% of sales by MVA volume. In total the shaded area includes just 6.5% of the market by MVA sales volume. The range of potential reduction in losses for those classes of equipment that make up at least 1% of sales is 0%-33.7%. For the largest, medium-voltage equipment, more than half of sales are already in excess of "energy-efficient" levels as defined by NEMA standard TP-1, *Guide to Determining Energy Efficiency for Distribution Transformer*. For this reason, CEE recommends using a cost-of-ownership methodology for medium-voltage equipment.

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