Load Sharing of Two Transformers in Parallel

Share of a total load carried by each of two transformers in parallel from their ratings and percentage impedances, and the largest load without overloading.

Method: Load division in inverse proportion to ohmic impedance (M.G. Say; IEC 60076-8 application guide)

Input parameters

Unit system: SI

Parameter	Value	Unit
Rating of transformer 1	1,000.0	kVA
Percentage impedance of transformer 1	5.0000	%
Rating of transformer 2	630.00	kVA
Percentage impedance of transformer 2	4.0000	%
Total load	1,500.0	kVA

Calculated results

Parameter	Value	Unit
Load on transformer 1	839.16	kVA
Load on transformer 2	660.84	kVA
Loading of transformer 1	83.916	%
Loading of transformer 2	104.90	%
Largest total load without overloading either	1,430.0	kVA

Notes for this case

- Equal voltage ratios and equal X/R ratios are assumed; unequal ratios add a circulating current.
- One transformer is overloaded at this total load.

Formula and method

$$S_{L1} = S\,\frac{S_1/z_1}{S_1/z_1 + S_2/z_2}, \quad S_{max} = \min(z_1, z_2)\left(\frac{S_1}{z_1} + \frac{S_2}{z_2}\right)$$

Variables

S_1	Rating of transformer 1	VA
z_1	Percentage impedance of transformer 1	-
S_2	Rating of transformer 2	VA
z_2	Percentage impedance of transformer 2	-
S	Total load	VA
S_{L1}	Load on transformer 1	VA
S_{L2}	Load on transformer 2	VA
u_1	Loading of transformer 1	-
u_2	Loading of transformer 2	-
S_{max}	Largest total load without overloading either	VA

Method and standards

Parallel impedances on a common base.

Assumptions and limits

- Same ratio, vector group and X/R.

References

- Load division in inverse proportion to ohmic impedance (M.G. Say; IEC 60076-8 application guide)

Report details

Report reference	FCC-958D-1M7R (the same inputs always give the same reference)
Generated	17 November 2026, 19:44 UTC
Calculator	Load Sharing of Two Transformers in Parallel
Method last reviewed	12 November 2026
Software release	FireCAD Calc, release of 17 November 2026
Release checks	3 reference cases of this calculator, computed independently, are checked on every release

Results are for engineering estimation. Verify critical designs against the referenced standards and your own data.

This calculator online

https://calc.firecad.com/electrical/transformers/transformers-parallel-load-sharing

Open this case on calc.firecad.com →

Reopens the calculator with the inputs of this report.