Chiller IPLV from Part-Load Efficiencies (AHRI 550/590 Weights)

Integrated part load value (IPLV) of a chiller from its efficiency at 100, 75, 50 and 25 % load with the AHRI 550/590 weights, as COP, EER and kW/TR.

Method: AHRI Standard 550/590 IPLV weights 0.01; 0.42; ...

Input parameters

Unit system: SI

Parameter	Value	Unit
COP at 100 % load	6.1000	
COP at 75 % load	7.2000	
COP at 50 % load	8.4000	
COP at 25 % load	7.0000	

Calculated results

Parameter	Value	Unit
IPLV as COP	7.7050	
IPLV as kW/TR	0.45644	
IPLV as EER (Btu/h per W)	26.291	

Notes for this case

- Weights 1, 42, 45 and 12 % at the AHRI rating conditions; AHRI warns IPLV is not a site energy prediction.

Formula and method

$$IPLV = 0.01A + 0.42B + 0.45C + 0.12D, \quad IPLV_{kW/TR} = \frac{1}{0.01/k_A + 0.42/k_B + 0.45/k_C + 0.12/k_D}, \quad k_i = \frac{3.517}{COP_i}$$

Variables

A	COP at 100 % load	-
B	COP at 75 % load	-
C	COP at 50 % load	-
D	COP at 25 % load	-
$IPLV$	IPLV as COP	-
$IPLV_{kW/TR}$	IPLV as kW/TR	-
$k_A \dots k_D$	Part-load efficiencies as kW/TR, 3.517/COP	-
$IPLV_{EER}$	IPLV as EER (Btu/h per W)	-

Method and standards

AHRI weighting.

Assumptions and limits

- AHRI rating conditions.

References

- AHRI Standard 550/590 IPLV weights 0.01
- 0.42
- 0.45
- 0.12 (COP weighted mean; kW/TR weighted harmonic mean)

Report details

Report reference	FCC-ZXKV-3MFY (the same inputs always give the same reference)
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Release checks	2 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/hvac/chillers/chiller-iplv

Open this case on calc.firecad.com →

Reopens the calculator with the inputs of this report.