



Reduced-wattage Fluorescents:

Not Quite Super T8s

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Defining Reduced Wattage Lamps

- Available in 30 W and 28 W versions (also 25 W)
- Analogous to 34 W T12 Energy Savers
- Use high-performance phosphors; krypton gas



Lamp Performance (1 of 2)

Manufacturer	Brand name	Power (watts)	Initial output (lumens)	Mean output	Mean efficacy (lm/W)	CRI	Life time (hours) (3-hr cycle)	
							Rapid start	Instant start
Full-wattage High-performance spec		32	3100	2900	90 ^a	81 ^b	24000 ^c	NA
GE	Watt-Miser	30	2850	2675	89.2	83	NA	20,000
GE	Watt-Miser XL	30	2800	2625	87.5	82	NA	24,000
GE	Ultra Max	28	2750	2585	92.3	85	NA	18,000
Osram Sylvania	Octron Super Saver Ecologic	30	2850	2680	89.3	85	24,000 on Quiktronic PSX and PSN ballasts only	18,000



Lamp Performance (2 of 2)

Osram Sylvania	Octron Super Saver Ecologic	28	2725	2562	91.5	85	24,000 on Quiktronic PSX and PSN ballasts only	18,000
Philips	ALTO Energy Advantage	30	2900	2750	91.7	86	30,000 on Advance Optanium ballast only	24,000
Philips	ALTO Energy Advantage	28	2725	2555	91.3	85	30,000 on Advance Optanium ballast only	24,000

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Operational Shortcomings

- Sensitive to cold temperatures (<60 F)
- Ballast limitations
 - No dimming
 - Limited program-rapid start ballasts, therefore limited use with occupancy sensors
- Less light output
- Shorter life in some cases

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Applications

- Best application:
 - Retrofit
 - No ballast change
 - Maintain light output, or reduce if overlit
 - No dimming or occupancy sensing



Applications

Lamp type	Ballast	Light levels (fc)	Power density (w/sq ft)
Standard T8	IS, normal BF, standard efficiency	58	1.12
High-performance T8	IS, low BF, high efficiency	62	0.9
30 W T8	IS, normal BF, standard efficiency	62	1.05
28 W T8	IS, low BF, high efficiency	53	0.85

Data from Benya/CEE



Applications

More limitations

- Users don't want to maintain multiple lamp types
- Less incentive for later, more comprehensive upgrades
- Adds confusion to an already confused market



Are They Cost-Effective?

	Base case: standard T8 lamp and IS ballast	High- performance, 32 W T8 lamp; high performance IS ballast	High- performance, 32W T8 lamp; high performance PRS ballast, occupancy sensor ^a	28 W T8 lamp, existing ballast	28 W T8 lamp, energy efficient ballast
Initial lamp output (lumens)	2800	3100	3100	2725	2725
Ballast factor	0.88	0.77	0.75	0.88	0.87
Design output (lumens)	2218	2244	2186	2254	2229
Fixture power (watts)	86	72	75	77.5	71
Energy use (kWh/yr)	344	288	188	310	284
Energy cost (\$/yr)	41.28	34.56	22.50	37.20	34.08
Energy cost savings (\$/yr)	NA	6.72	18.78	4.08	7.20
Approximate installed cost (\$)	NA	50	65	15	50
Payback period (yrs)	NA	7.44	3.46	3.68	6.94



Are They Cost-Effective?

Assumptions: 4000 operating hours/yr; \$0.12/kWh electricity rate; 3-lamp direct fixtures

IS= instant start, PRS= programmed rapid start, NA=not applicable

Notes

a: assumes occupancy sensing reduces hours of use from 4000 to 2500

b: assumes installed cost for occupancy sensor is \$150 and sensor covers area for 10 fixtures



Conclusions

- Reduced-wattage lamps are here to stay
- The lamps have limitations—use them wisely
- They can be cost-effective in retrofits where space is conditioned and ballasts can stay
- But they may limit options down the road



For More Information

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