



OSRAM FH® FLUORESCENT LAMP SYSTEM

THE INNOVATIVE CONCEPT FOR ECONOMICAL LIGHTING



THERE IS LIGHT. AND THERE IS OSRAM.

OSRAM

THE FH® SYSTEM: SMALLER DIAMETER, GREATER ECONOMY, BETTER DESIGN

At up to 104 lumen per watt, FH® (Fluorescent High Efficiency) fluorescent lamps have the highest luminous efficacy of any fluorescent lamp and offer therefore the maximum efficiency. The FH® system, with a lamp diameter of

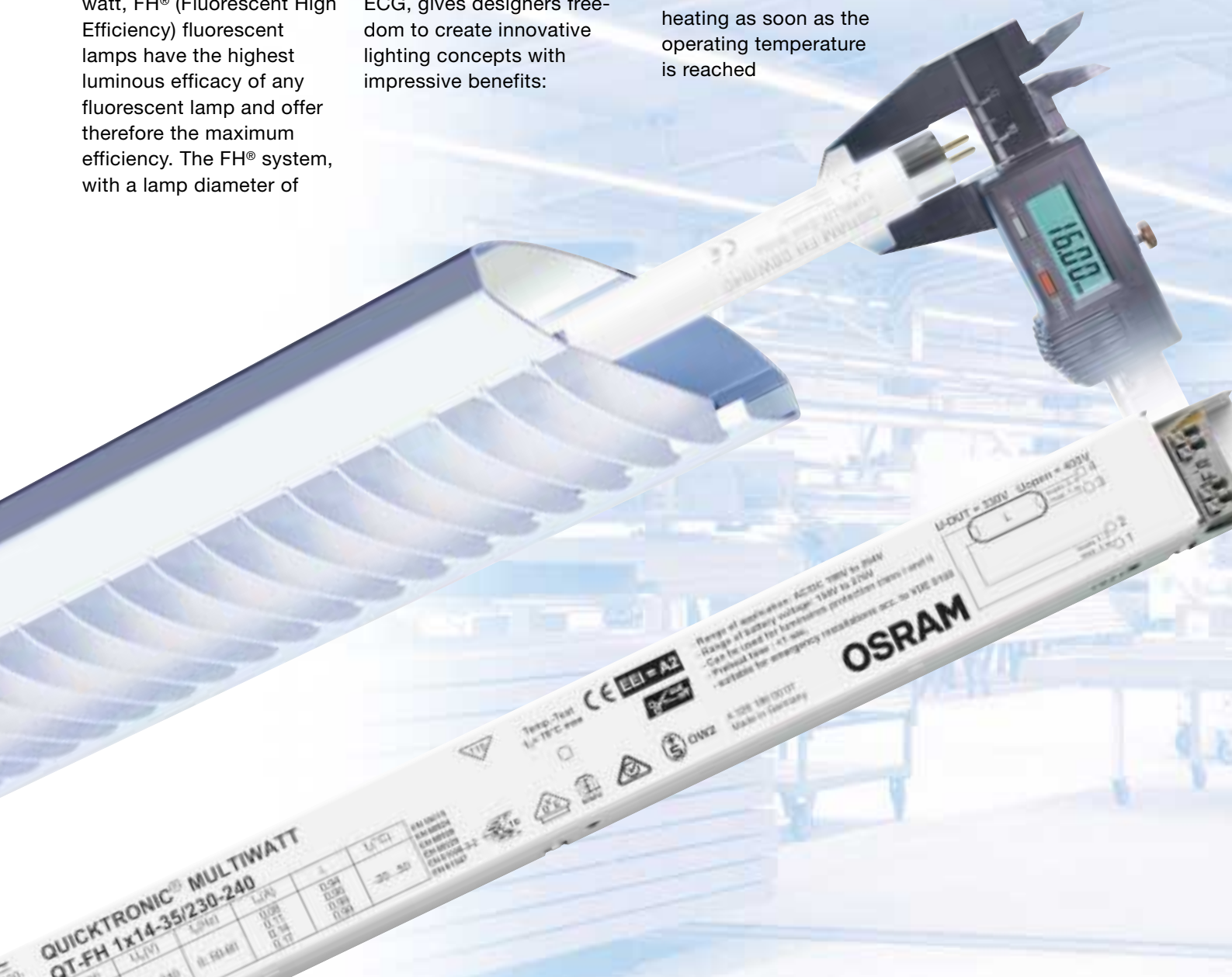
only 16 mm and a cut-off ECG, gives designers freedom to create innovative lighting concepts with impressive benefits:

- higher luminaire efficiency thanks to less shading and a slimmer lamp
- much smaller luminaire dimensions thanks to smaller lamp diameter
- 5 cm shorter lamp for luminaire lengths, therefore compatible with standard ceiling modules
- higher optimum temperature for luminous flux (raised from 25°C to 35°C) for more lumens in the luminaire
- longer service life thanks to minimal loss of luminous flux from the improved LUMILUX® PLUS phosphor
- gentle energy-saving operation thanks to the cut-off ECG, with disconnection of the filament heating as soon as the operating temperature is reached

MAXIMUM EFFICIENCY, MINIMUM DIMENSIONS

With the FH® system from OSRAM, luminaire designers can go in either of two directions:

- max. efficiency within outer dimensions designed for T8/26 mm lamps
- minimum luminaire dimensions, with the same output as T8 luminaires but up to 50% smaller



20% ENERGY SAVINGS

The savings all add up when the FH® system is used in outer dimensions designed for T8 lamps:

- 5% higher luminous efficacy of the FH® lamps compared with T8 lamps
- 5% more light thanks to much less self-shading from the slimmer lamp
- 10% higher luminaire efficiency because the temperature for optimum luminous flux has been raised to 35°C

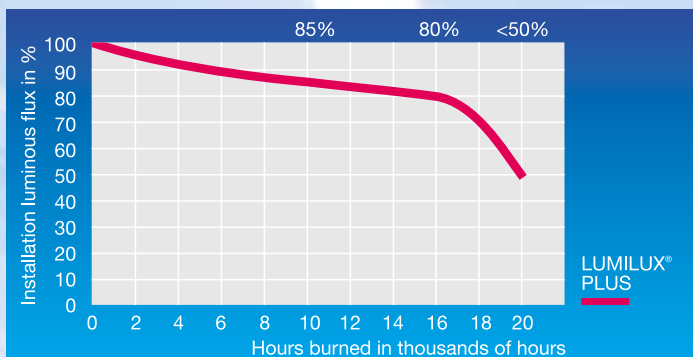
MINIMUM DIMENSIONS FOR MAXIMUM FREEDOM OF DESIGN

For the same efficiency as a T8 luminaire the volume of an FH® luminaire can be reduced by more than 50% – thanks to the following factors:

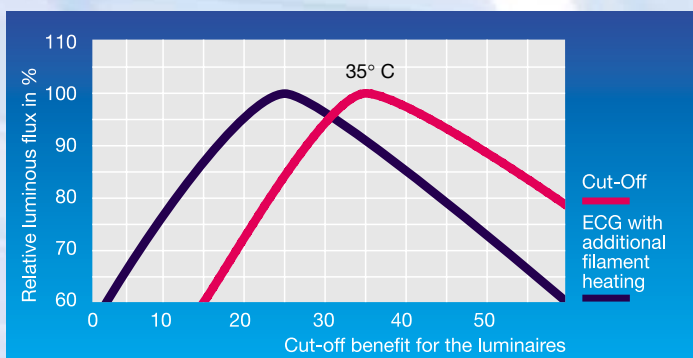
- the same shading with 40% smaller reflectors
- further reductions in the size of the reflector are possible because the temperature for optimum luminous flux has been raised to 35°C
- slim ECG for compact luminaire dimensions
- slim MULTIWATT ECG for compact luminaire dimensions
- 2-lamp ECG as slim as a 1-lamp ECG, plus six new combinations

SYSTEMATIC PERFECTION

As the developer of both the lamp and the ECG, OSRAM has been able, right from the start, to match the two components in the FH® system perfectly to one another. This ensures that the lamps perform reliably throughout their impressively long lives. And then there's the well-known OSRAM quality. For example, over 90% of OSRAM ECGs last more than 50 000 hours, which is considerably longer than the lamp itself.



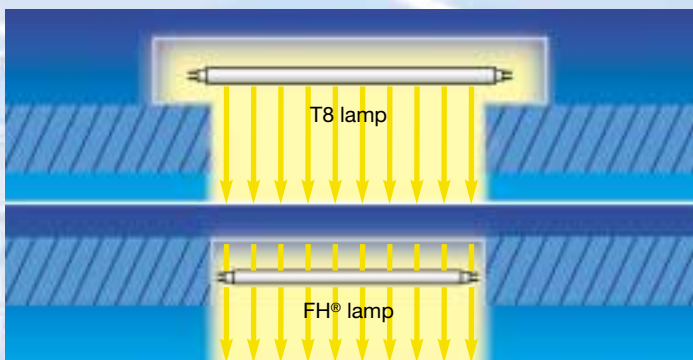
The small drop in installation luminous flux is thanks to the new LUMILUX® PLUS phosphor which increases the service life (mortality x maintenance)



Even more effective thanks to cut-off technology: The temperature for optimum luminous flux has been raised to 35°C. This results in a 6 to 8% increase in luminaire efficiency for direct lighting luminaires.



Slim lamp, compact reflector: With the lamp diameter reduced to 16 mm the reflectors can be 40% smaller for the same shading.



Fits perfectly in grid systems: The FH® lamps are 50 mm shorter than T8 lamps so designers can produce luminaires that fit easily in standard grids without resorting to costly ceiling adjustments, which with T8, just make the installation more difficult and time consuming.

Potential energy savings for T5 FH®/ECG/mirror screen luminaires

Open-plan office: 21.8 m x 12.5 m x 3.0 m
(Surface mounted luminaires, illuminance > 500 lux)

T8 Ø 26 mm, L36/21 3200 lm = max. Ø	T5 Ø 16 mm, FH®35W/840 3650 lm = max. Ø
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2 x 1200 mm	2 x 1449 mm
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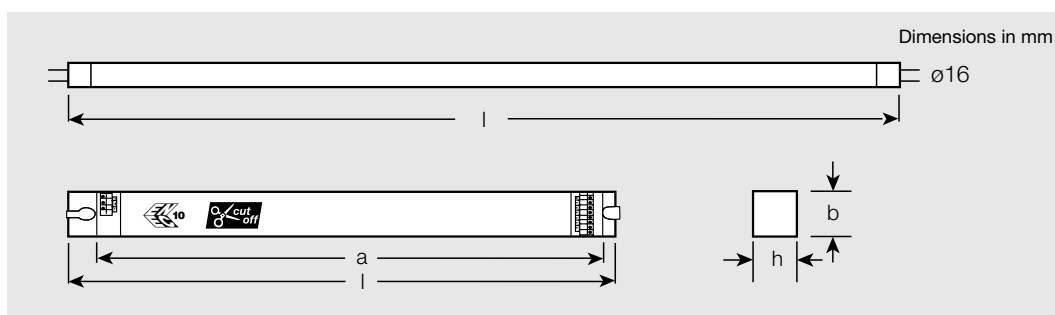
48 luminaires	36 luminaires
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3365 W	2736 W
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20%
energy savings

Maximum economy: Our example shows that energy savings of 20% can be achieved by changing from T8 luminaires to T5 FH® luminaires.

TECHNICAL DATA



Lamp	FH 14 W	FH 21 W	FH 28 W	FH 35 W
Wattage	14 W	21 W	28 W	35 W
Rated luminous flux (25°C) ¹⁾	1200 lm	1900 lm	2600 lm	3300 lm
Max. luminous flux (35°C)	1350 lm	2100 lm	2900 lm	3650 lm
Colour rendering index (Ra)	85	85	85	85
Lamp length l	550 mm	850 mm	1150 mm	1450 mm
Lamp base	G5	G5	G5	G5

1) Planning and measurement should be based on the rated luminous flux

QUICKTRONIC®	1-lamp	2-/3-/4-lamp
Not suitable for use with dimmers	QT-FH 1x14/230-240 ¹⁾ QT-FH 1x21/230-240 ¹⁾ QT-FH 1x14-35/230-240 ²⁾	QT-FH 2x14-35/230-240 ²⁾ QT-FH 3x14/230-240 ³⁾ QT-FH 4x14/230-240 ³⁾
Suitable for use with dimmers	1-lamp QT-FH 1x14/230-240 DIM ²⁾ QT-FH 1x21/230-240 DIM ²⁾ QT-FH 1x28/230-240 DIM ²⁾ QT-FH 1x35/230-240 DIM ²⁾	2-lamp QT-FH 2x14/230-240 DIM ⁴⁾ QT-FH 2x21/230-240 DIM ⁴⁾ QT-FH 2x28/230-240 DIM ⁴⁾ QT-FH 2x35/230-240 DIM ⁴⁾

1) Size (l x w x h) 237 x 30 x 30 mm with 220 mm hole spacing

3) Size (l x w x h) 425 x 39 x 30 mm with 415 mm hole spacing

2) Size (l x w x h) 360 x 30 x 30 mm with 350 mm hole spacing

4) Size (l x w x h) 423 x 30 x 30 mm with 415 mm hole spacing

QUICKTRONIC® for FH® fluorescent lamps (T5, Ø 16 mm)

- Digital ECG for T5/FH fluorescent lamps
- Warm start
- Optimal operation of all approved lamps with rated data
- Lamp operation in accordance with EN 60929 and IEC 929
- ECG safety in accordance with EN 60928 and IEC 928
- End-of-life shutdown:
Reliable shutdown of the ECG at the end of the lamp's life

- Good radio interference suppression
- Mains harmonics in accordance with EN 61000-3-2 and IEC 1000-3-2
- Immunity in accordance with EN 61547 and IEC 1547
- Low total harmonic distortion THD<10%
- Suitable for lighting systems with frequent on/off switching
- Suitable for use in emergency lighting systems in accordance with VDE 0108
- For luminaires of protection classes I and II
- Automatic restart after replacement of lamps

- Long life (50,000 h at <10% failure, at tc max = 70°C)
- Approval marks:   

Valid for non-dimmable FH® ECGs

- The cut-off circuit ensures minimum losses by disconnecting filament heating
- Long lamp life 
- Higher luminaire efficiency