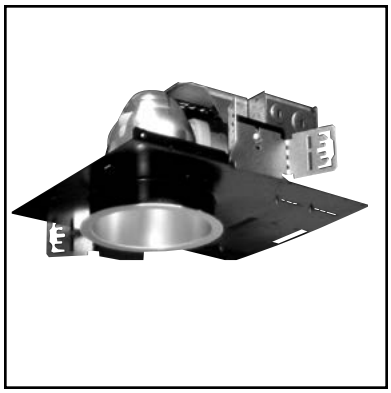


Featuring VirtualS•urce® Reflectors

VirtualS•urce®

PATENTED OPTICAL CONCEPT

Compact Fluorescent, Metal Halide and Incandescent Downlights

DATE: TYPE:

FIRM NAME:

PROJECT:

Architektūr

US Patent No. 5,919.969

THE CONCEPT

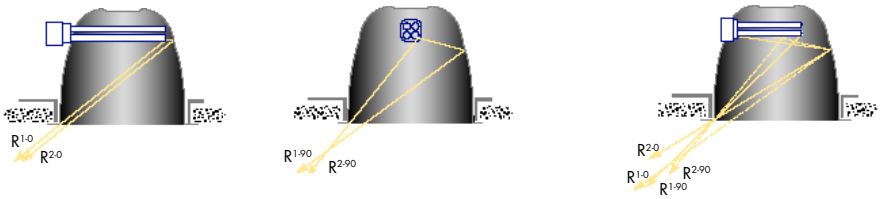
The introduction of Prescolite's Virtual Source optics has fundamentally changed the way that compact fluorescent optical performance is measured and observed. Virtual Source represents a uniquely new approach to reflector design. Once explained, it is easily understood. However, an underlying set of complex geometric principals is the key to an optical design that is unparalleled in the industry.

TRADITIONAL OPTICAL DESIGN (NON-PRESCOLITE)

Compact fluorescent lamps are tubular and not symmetrical in the horizontal position. They have different relative physical cutoff (and thereby optical cutoff) between 0° and 90° (see figure 1.) Consequently, horizontally mounted compact fluorescent lamps in a non-Virtual Source® reflector result in "visual noise" that lighting designers find objectionable (see Figure 1).

NON-PRESCOLITE = VISUAL NOISE

Figure 1



The promise:
Parallel cutoff (between the optical and physical cutoff).

The reason it is impossible:
The horizontally mounted compact fluorescent lamp is asymmetrical. When the optical cutoff reflects light out of the reflector at angles higher than the physical cutoff, side angle glare is created.

The typical result:
So-called "bunny's teeth," odd striations, or bright spots are visible on the side of the reflector. An active lower reflector (intentional or not) has uneven brightness that is apparent to the viewer.

Figure 2

TYPICAL TWO-LAMP TRIPLE TUBE DOWNLIGHT

Zonal Lumens and Percentages

Zone	Lumens	% Lamp	% Luminaire
0° - 30°	1628	33.93	45.81
0° - 40°	2548	**53.09**	71.66
0° - 60°	3551	73.98	99.87
0° - 90°	3555	74.08	100.00
40° - 90°	1007	**20.99**	28.34
60° - 90°	4	0.09	0.13
90° - 180°	0	0.00	0.00
0° - 180°	3555	74.08	100.00

Efficiency = 74.1%
S/MH = 1.2
SC (Along) = 1/4, SC (Across) = 1.2

PRESCOLITE'S VIRTUAL SOURCE TWO-LAMP TRIPLE TUBE DOWNLIGHT

Zonal Lumens and Percentages

Zone	Lumens	% Lamp	% Luminaire
0° - 30°	2055	42.81	57.60
0° - 40°	3199	**66.66**	89.86
0° - 60°	3568	74.33	100.00
0° - 90°	3568	74.33	100.00
40° - 90°	368	**7.67**	10.32
60° - 90°	0	0.00	0.00
90° - 180°	0	0.00	0.00
0° - 180°	3568	74.33	100.00

Efficiency = 74.3%
S/MH = 1.2
SC (Along) = 1/4, SC (Across) = 1.2

Prescolite VirtualS•urce®

Competitor X

Competitor Y

Competitor Z

"Virtual Source reflectors exhibit a unique lamp image flow, which is the result of the first studied application of ergonomic design in downlighting. The passive lower reflector always fills logically and smoothly with light,

at a rate constant to the viewer's movement. The result is quiet, unobtrusive downlighting by design."

– Prescolite Optical Designer

prescolite
A Division of Hubbell Lighting, Inc.

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PRESCOLITE'S VirtualS•urce® OPTICAL DESIGN

Prescolite's optical designer deviated from the standard design and engineered a "transition line" that separates the upper portion of the reflector from the lower portion (figure 1). As a result, the cutoff is derived from the transition line, not the lamp(s). The active upper reflector section is called the Virtual Source, or "glowy top." The effect emulates a round glowing shape, similar to an R-lamp. The lower section is intentionally designed to be inactive until the viewer is able to distinguish the active top section as a distinct optical element.

RESULT: SYMMETRICAL CUTOFF

Virtual Source downlights have the same cutoff angle in all lateral planes because the transition line in the reflector defines the cutoff angle. Symmetrical cutoff yields downlights with the same appearance regardless of how the viewer approaches the downlight, whether the lamp is vertically or horizontally mounted.

EFFICIENCY

Typical downlights derive a significant amount of their efficiency above the 40° zone, resulting in direct glare. Prescolite Virtual Source optics deliver most of their light in the 0°-40° zone, which results in more illumination on the task where you need it and a downlight that is both efficient and effective (figure 3).

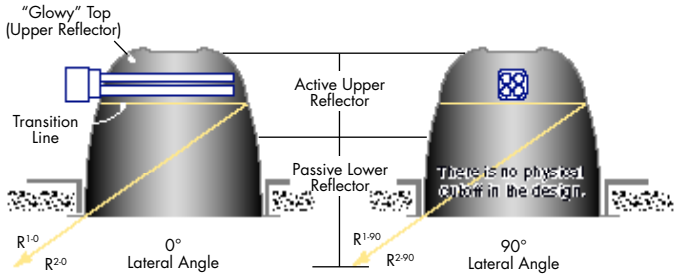
CONSISTENCY OF APPEARANCE

Virtual Source has a consistent appearance among different downlight types. Whether the downlight is a single horizontal quad tube (26W, 32W, or 42W), two-lamp horizontal quad tube, vertical incandescent, or even horizontal metal halide, it will have a consistent optical appearance (regardless of lamp manufacturer) and precise cutoff.

SHARP CUTOFF, LOW LUMINANCE, AND HIGH VCP

Cutoff consistency results in extremely low brightness in the lower reflector system, yielding a glare-free downlight. Virtual Source downlights exhibit low luminance in the lower (passive) reflector section and high Visual Comfort Probability values.

PRESCOLITE® VIRTUAL SOURCE OPTIC DESIGN Figure 3



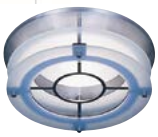
THE COMPLETE OFFERING OF VirtualS•urce® LUMINAIRES

Architektūr
COMPACT FLUORESCENT
A comprehensive series of Virtual Source compact fluorescent luminaires.

Architektūr
CROSS BAFFLE
Prescolite's two-piece construction, cross-baffle design addresses the issues of aesthetics, performance, and product breadth.

Architektūr
METAL HALIDE
6" and 8" E-17 metal halide Virtual Source optics.

Architektūr
INCANDESCENT
6" and 8" A-line Virtual Source optics.



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ARCHITECTURAL ELEMENTS
A beautiful glass custom series available with CFL, metal halide and incandescent Virtual Source luminaires.

PENDALUM™ SERIES
Virtual Source triple tube and new metal halide E-17 optics.

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TURBO BAFFLE
Prescolite's newest cross-baffle luminaires provide an industrial, high-tech appearance with patented Virtual Source® performance for use in commercial and institutional applications with shallow plenums.

LiteForms®
CYLINDERS
Wall, Ceiling & Pendant 8" and 9" triple tube compact fluorescent Virtual Source optics.

LiteBox®
TBX - TRIPLE TUBE CFL
Premium Virtual Source performance in an economical package.

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