



Image left: 3095 with wall washer trim.
Image above: 3094 with accent lighting trim.

Convergence in lighting fixture design

The 3000 series of Specialty Lighting Industries.

Convergence is the technological buzzword of the new millennium. It refers to the coming together of two or more distinct entities or phenomena. Convergent devices that were once thought to be revolutionary, such as the camera phone, have now found their way into the fabric of everyday life. In an age where design offices can print, scan and copy all from the same small machine, why is it that the architectural community has been slow to realize the benefits that convergence brings to the design of the ceiling plane?

The benefits of convergence are simplification and economy. By combining several devices, the collective form factor is reduced, yielding a smaller package. By reducing the number of items in the ceiling we can eliminate visual clutter, thereby creating a unified design that is easier to understand and resulting in a space that is more comfortable to inhabit. While leading edge products are often expensive, as the technology is adopted convergent products become more cost-effective than their component counterparts. In the built environment one must consider not only the cost of

the equipment but the cost of installation as well. The economies of convergent devices are multiplied by decreasing the number of objects that must be installed, consequently reducing the labor costs and lessening construction time.

Implications to architectural lighting design

Conventional lighting design relies on individual fixtures to illuminate a space. These fixtures may have different appearances depending upon their function. As an example, an application that requires a mixture of linear and point sources for optimal illumination may leave the designer with the unenviable challenge of organizing these two disparate elements into a simple reflected ceiling plan.

A similar challenge exists when combining several color temperature sources. To do so from individual fixtures leaves the ceiling littered with different colored apertures. Mixing sources within the same aperture tames this disarray by presenting a uniform aperture color yet still offers the benefits of an expanded spectrum.

At times the designer may want to illuminate many objects from the same location. This requires several fixtures and accordingly multiple apertures. Convergent fixtures address this by combining luminaires with different performance characteristics in a single aperture to illuminate multiple tasks simultaneously. The designer can now light two walls from the same location or wash a wall and provide task lighting from the same fixture.

Inroads have been made into convergent fixture design but a new series of luminaires from Specialty Lighting Industries takes these concepts to a higher level. Specialty Lighting Industries have recently released the 3000 series of luminaires that allow the designer to solve many lighting problems while maintaining a uniform ceiling aperture. The foundation of the fixture is the sectional extruded aluminum housing. The optimal housing is configured at the factory based on the aperture, types of sources and distribution that that is desired.

Power distribution through the fixture is achieved with a three circuit wireway. An optional fourth circuit

of indirect fluorescent lamps is also available. If the designer needs additional circuitry the housing can be made with dual wiring compartments. This configuration can also be used to supply separate voltages or to isolate emergency circuits from the normal power.

The designer can select from a wide array of lighting elements that snap anywhere along the length of the housing. These elements have been created using all of the popular sources including: incandescent, halogen, low-voltage, ceramic metal halide and fluorescent. The elements may be used to provide ambient, accent, task, wall washing or wall grazing light. Each lighting element comes complete with control gear. This allows the fixture housing to be supplied at a higher voltage such as 277 volts and the transformers or ballasts on each lighting element will change the voltage to correctly supply the source.

The product has been released with two trims that match existing fixtures from Specialty's product line. A wall washer trim and a recessed trim are available with or without flanges to integrate with

many different ceiling materials. Future trims are planned to vary the appearance from an open slot to a trimless, lensed aperture.

The designer may select lighting elements that respond to the architectural and task requirements and place multiple elements within a single housing. The system is totally flexible and the elements may be easily changed in the field to respond to varying architectural conditions. This is a boon to the changing requirements of the museum, retail and residential environments, but can come in useful in

the corporate realm as well.

The 3000 series by Specialty Lighting Industries clearly demonstrates how convergence in fixture design can be used to address diverse architectural requirements without sacrificing design criteria. The unit's flexibility allows the designer to meet the challenges of demanding applications while complying with stringent energy codes. It has the additional benefit of being able to be modified throughout its service life to continually meet changing uses of the space.

The future

The 3000 series shows just how far convergent design can be taken even when limited to just the lighting component of the ceiling. The next step is to integrate several building systems into the same device. There are existing examples that combine lighting with one other service such as HVAC or life safety speakers but there is still a long way to go.

The need for convergent ceiling devices is apparent. Logically, many devices have similar placement re-

quirements. The distribution of a downlight is not dissimilar from a sprinkler head. It is only natural for the architect to want to organize these elements on the same grid, competing for the same location. The next generation convergent device will combine multiple services together into a comprehensive appliance. One day lighting, HVAC, life safety speakers, sprinkler heads, smoke detectors, occupancy sensors and daylight sensors will cohabit the same piece of technology. The complications preventing this are more than just mechanical. The engineering disciplines that design the systems and the trades that install the devices must adopt the convergent philosophy and work together as well. Once this has been achieved then an integrated architectural ceiling free of visual clutter will become as common as the camera phone.

