

DESIGN at WORK

Issue 1 | Volume 1

A Humanscale Publication

IMPROVING HEALTH
& COMFORT
IN THE WORKPLACE

Office Lighting 101

The Latest Technology,
Reducing Lighting Costs &
Improving Productivity

INSIDE:

Empowering a Healthy
Workplace at GE Energy
Worldwide

Lifecycle Ergonomics:
From Design to
Implementation

On **Design** with
Niels Diffrient



Features:

- 3** Insight **Office Lighting 101**
Need-to-know info and timely discussion on lighting technology, cost savings, energy efficiency, and workplace productivity
- 6** Profile **Global Thinker**
How Barbara Peck of GE Energy is supporting the day-to-day ergonomic needs of their 300+ facilities in all regions of the world

Departments:

- 8** At Issue **Lifecycle Ergonomics**
Workspace designers, procurement managers and ergonomics & safety professionals share unique perspectives on creating a healthy, ergonomically sound workplace
- 10** On Design **Niels Diffrient**
Design at Work Editor Dan Cannon's discussion with legendary industrial designer, Niels Diffrient

editor's note



Dan Cannon, Editor

Welcome to the premiere issue of *Design at Work*

For many years, workspace was designed around the belief that more light would lead to better visual performance—the brighter, the better—and to a more productive workforce. Turns out the only measurable results from an over-lit workplace are wasted energy, increased energy costs, and a variety of human factors issues—including eyestrain, and headaches—which ultimately have a negative impact on worker productivity.

But advances in technology and design are changing the rules and practice of office lighting. And today, there are smarter solutions available for lighting a healthier, more comfortable and more productive workplace.

In this first issue of *Design at Work* we hear from the thought leaders driving the technology, design and implementation of these lighting solutions. We've also gathered professionals from architecture and design, facilities management, procurement, safety and ergonomics to share with us ways they're making an impact in their respective professions, each committed to health and comfort in the workplace.

Thank you for reading!

Dan Cannon
Editor
designatwork@humanscale.com



Office Lighting 101



Using task lighting to supplement an ambient lighting scheme can be an integral part of a comprehensive strategy to combat CVS and musculoskeletal discomfort.

Lighting is one of the most understated aspects of an ergonomic workplace, yet arguably one of the most important with respect to human health and performance. According to a Cornell University study, eyestrain remains the number one complaint among office workers and is directly linked to ineffective office lighting.

A common misconception with regard to lighting is that brighter is always better. In fact, many office environments are over-lit, which contributes to glare and vision issues such as eyestrain and headaches, also

energy while providing a longer lasting, aesthetically pleasing light source—is another. And speaking of bulb technology, current research from scientists at the LRC shows a bright future for light-emitting diodes (LEDs) as the next generation of highly efficient light sources for homes and commercial applications.

To help us better understand the role of lighting in today's office, *Design at Work* asked three experts to share perspectives on office lighting from their unique professional viewpoints.

referred to as Computer Vision Syndrome (CVS)—a condition OSHA says affects up to 90 percent of office workers. Studies from the Lighting Research Center (LRC) at Rensselaer Polytechnic Institute highlight the relationship between office lighting and worker productivity, suggesting that appropriate task visibility is the aspect of lighting that directly affects performance.

Key issues faced by today's architects, designers, facilities managers and ergonomists include supporting the unique lighting requirements of different tasks, and facilitating the varying lighting needs of different aged workers.

Then there's energy consumption. It is estimated that the inefficient, single-source, overhead lighting schemes common in many offices today—which produce too much light for most tasks and can adversely affect worker mood and productivity—waste more than \$20 billion annually in unnecessary energy costs.

Thanks to recent advances in design and technology, there are lighting solutions available that are both energy efficient and support a more comfortable, productive workplace. Task lighting, for example, is a good solution to our varying lighting needs, and the use of compact fluorescent bulbs—which require less

Jeffrey Anshel,
Doctor of Optometry (OD), author of *Visual Ergonomics in the Workplace*

How important is lighting to our work?
Office lighting is something most of us don't pay much attention to, but our eyes are very much affected by it, and our work can be made much easier or harder by varying the kind of illumination in the work area.

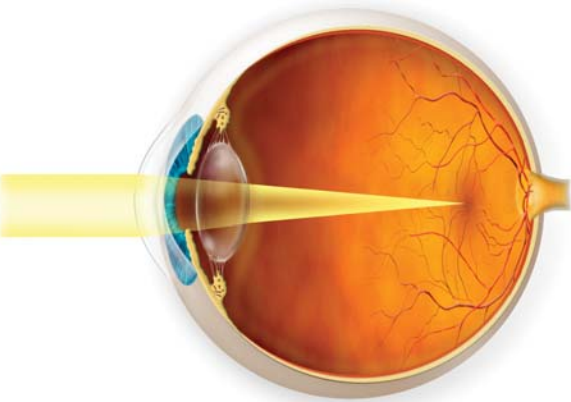
How do our eyes adapt to the demands of different tasks?
Our eyes are designed to work with a certain amount of light and to adjust to varying amounts light. However, improper lighting can create a very stressful visual situation, leading to poor performance and worker discomfort.

What are some ways to deal with glare?
There are two main types of glare to consider: veiling glare and discomfort glare. The most significant source of veiling glare is the reflection from the glass of the computer display, as well as lightly colored clothing or work surfaces. Discomfort glare is caused by scattered light directly entering the eye. This often comes from outside light or peripheral overhead lighting sources. One of the best ways to address monitor glare is with an antiglare filter.

What is the relationship between lighting and the layout of our workspace?

Unfortunately, most offices are designed and built to accommodate paperwork, which requires reflected light. Today's offices are mostly computer-based and computer displays have their own light. These two different lighting requirements can create a conflict in the amount of light needed to see clearly and comfortably.

The good news is that many potential eye and/or vision problems can be reduced or eliminated by the appropriate adjustment to the workstation, including height and placement of computer monitors, and lighting control.



“Our eyes are designed to work with a certain amount of light and to adjust to varying amounts light. Improper lighting can create a very stressful visual situation, leading to poor performance and worker discomfort” —Jeffrey Anshel, OD

Karie Vagedes, Designer, Huntsman Architectural Group

What key lighting issues do you face in your work with corporate interiors?

Key lighting issues to me are first, aesthetics. Then, once I find something I like and that works well with the space, cost analysis comes into play. I try to provide something very fitting for the space aesthetically, while making sure it still performs to the level of intent for a quality space and budget. Title 24 (California's Code for Energy Efficiency Standards for Residential and Nonresidential Buildings) is a given in California, so bulb technology is a big factor here.

How do you design for varying illumination levels for different tasks?

Varying illumination levels can be achieved in a variety of ways. I like to provide indirect lighting in large open work areas. This gives a nice general over all lighting level, while cutting down on glare and harsh reflections on work surfaces and computers. For additional lighting, individual task lighting works very well. Even in private offices this same concept can still be put into practice. Using as much natural light as possible also helps workers feel more comfortable as well as increases productivity. In addition, I try to provide low levels of color contrasts on work surfaces to alleviate eyestrain between paper and desk surfaces.

Alan Hedge, PhD, CPE, Director of the Human Factors and Ergonomics Laboratory at the Cornell University Department of Design and Environmental Analysis

What lighting issues need to be addressed in today's offices?

Modern lighting solutions must address the inherent conflicts between creating lighting that works for computer screens and lighting that works for paper tasks. Many offices still have brighter lighting that favors paperwork, but reduces computer screen contrast and can create veiling glare.

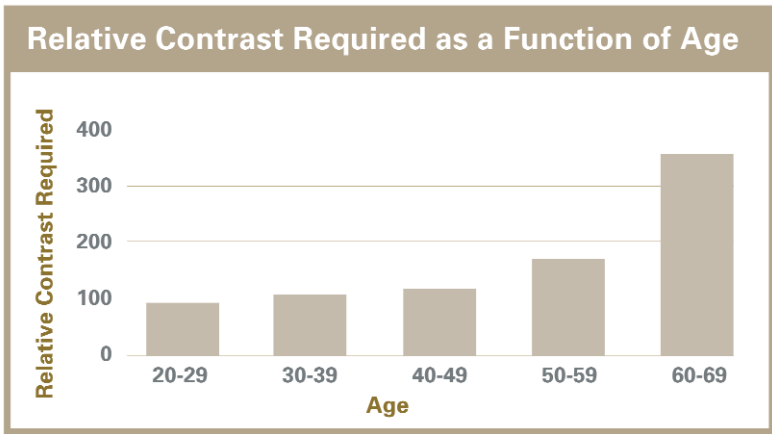
What lighting solutions are available to address this conflict?

Overall office lighting levels can be lowered to optimize computer screen visibility and save energy, and paperwork can be illuminated at a higher level with energy efficient, adjustable task lighting.

We have studied this approach, called two-component lighting (<http://ergo.human.cornell.edu/culig.htm>), and found that it can be very successful. This approach has even greater merit when addressing the lighting needs of workers with ageing eyes (those > 40 years old), because the optical density of the eye increases with age, and so higher light levels are required by older workers to achieve the same visibility level to read documents.

Any suggestions for achieving management level buy-in for a lighting program?

Many companies now offer their employees an annual eye examination. While this can ensure that all workers have normally corrected vision it does not guarantee that the lighting environment is optimal for the work they are doing, and widespread complaints of eyestrain problems can still occur. Periodic user surveys of lighting issues should be conducted to determine the prevalence of eyestrain and to know whether there is a need for improved lighting in a facility. Lighting design solutions can then be tested and the successful redesign solution can be implemented.



In addition to the wide range of task-specific lighting requirements, each individual has unique lighting requirements based primarily on age. Put simply, the older we get, the more light we need.

Task Lighting

A Smart Solution for Lighting Today's Workspace

By Jonathan Puleio, M.Sc.
National Ergonomist, Humanscale Consulting

Task lighting is perhaps the greatest area of growth in office ergonomics and for good reason—our working population continues to rely heavily on computer-based tasks and the percentage of the US workforce over 40 continues to rise. These factors, combined with a renewed emphasis on reducing energy consumption have necessitated the need for more intelligent lighting systems.

The Monitor/Document Conflict

Monitors are direct sources of light and are best viewed with less ambient light, while paper documents require significant light to be viewed. In fact, the lighting required to view paper documents is 4-5 times higher than that required for viewing a monitor. Yet monitors and documents are equally lit on most desktops. A two-component lighting scheme is necessary to achieve recommended lighting levels in office environments.

Reducing Energy Costs & Use

To add, illumination levels are directly proportional to the square of the distance from the light source. This implies that lighting an interior space solely from the ceiling is an inefficient use of energy. A study published by the International Committee on Illumination (Akashi et al, 1999) showed that a task and ambient system reduced energy consumption by one third compared with conventional lighting systems.

The Aging Workforce

Over the next ten years, 50 percent of our working population will be 40 years of age or older. By the year 2050, 20 percent of the working population will have reached 65 years of age. These statistics have dramatic implications with respect to our current lighting standards as the need for contrast exponentially increases after the age of 40. For instance, persons 61 and older require upwards of 250 percent more contrast to view the same documents as those in their 20s. The need for additional contrast correlates directly to the onset of presbyopia, a condition that occurs in most adults in their mid 40s. Presbyopia involves the hardening of the corneal lens and affects our ability to see near field objects. The opacity of the lens decreases with age as well, further affecting vision.

Providing workers with individual control over their light levels through the use of task lighting is an excellent solution to the aforementioned problem. Positioning a task light equipped with a single 26-watt compact fluorescent bulb can provide work-surface illumination in the range of 80-200 footcandles, sufficiently accommodating the tasks being performed by office workers ranging in age from 20 through 70.

Researchers at Rensselaer Polytechnic Institute's Lighting Research Center (LRC) have found that providing workers with control over their lighting has benefits beyond visual acuity. In a 1999 study by Veitch, subjects that were given control over both their ambient and task lighting reported increased comfort, and rated their tasks as being less difficult. They also rated the lighting quality as higher and produced a 35-42% decrease in energy consumption.

Recent developments in lighting and human factors research go far beyond the scope of this article. For a more comprehensive overview and discussion of the most salient issues in lighting design, please visit: www.humanscale.com/designatwork.

Need to Know:

What is task lighting and why should we use it?

Task lighting provides the correct amount of light for the task being performed. Viewing a computer monitor or walking down an aisle requires far less light than does reading a typewritten page, making it neither effective nor efficient to light the entire environment at the same level. When utilizing task lighting, the general lighting level in the facility can be lowered to a level appropriate for monitor viewing, thus creating a softer, more pleasant atmosphere and saving energy. Work surfaces are supplemented with task lighting to give workers total control over where and how much light they need for other tasks, such as reading a document.

Why choose a compact fluorescent task light?

Compact fluorescent bulbs use less energy than incandescents (about one fourth), and last up to 8 times longer. Compact fluorescent bulbs are also much cooler in operation than regular incandescent bulbs or halogen bulbs and are, thereby, safer and more comfortable to work near.

What Color Rendering Index (CRI) should task light bulbs have?

CRI is a method for describing the effect of a light source on the color appearance of objects being illuminated. A CRI of 100 represents the reference condition of daylight (and thus the maximum CRI possible). In general, low CRI illumination may render some colors unnatural and lamps with a CRI under 60 should not be used. It has been proven that at a certain point, the higher the CRI, the lower the illuminance. A CRI in the 80s is good for all general tasks.

Can compact fluorescents be made to give off a warmer light like incandescents?

Yes, compact fluorescent bulbs are available in color temperatures ranging from 2700K for warmer light to approximately 4100K for cooler sources like daylight fluorescent.

From the AIA/Architectural Record Continuing Education Series



Today, GE Energy is generating a safe, healthy workforce with acclaimed ergonomics programs and a solid support network. Much of the credit for this belongs to Barbara Peck, whose primary responsibility is working with GE Energy facilities to develop and maintain global ergonomic programs.

What started out six years ago as an office ergonomics initiative for GE Energy's Atlanta headquarters, which, under Peck's leadership ultimately earned the site a prestigious OSHA Star certification, has grown into a model ergonomics program for all GE Energy locations. But as ergonomics gained momentum within GE Energy, the challenge of supporting the daily ergonomic needs at their facilities—from Dallas to Dublin and Shanghai to Sydney—became an issue Peck knew she had to remedy.

The Vision: A Global Ergonomics Distribution Program

"As I visited our facilities in Asia and Europe, it became apparent to me that a critical need existed for global GE Energy product specifications and vendor agreements that provided country currency quotations as well as regional distribution points. So, Bency Thomas of GE Energy Sourcing and I developed goals and objectives for a GE Energy Global Ergonomics Distribution Plan."

Global Thinker

Faced with the challenge of equipping 34,000 GE Energy employees in all regions of the world with quality ergonomic products and support, **Barbara Peck**, Global Ergonomics & Office Safety Leader for the **GE Energy Business**, led an initiative to establish a distribution network designed to support the day-to-day ergonomic needs of their 500+ facilities worldwide.

Critical to Success

The intent was to create, communicate, equip and educate employees with world-class ergonomics products and standards, as well as support GE Energy's existing office space planning initiatives. Consistencies in product quality, appearance, functionality and customer service were identified as critical to the success of this program. In addition, the distribution plan needed to allow Peck and her team control over the specific products distributed to them, while at the same time allowing local decision making with regard to implementation of the task lighting, seating and all other ergonomic solutions.

"In order to achieve these objectives, we needed a partner that could distribute and provide service and support globally. We found such a partner in Humanscale."

"GE Energy's main challenge seemed to be finding a single source for meeting their global ergonomic needs," said Mark Paske of Humanscale. "Prior to contracting with us, their ergonomic vendor strategy involved multiple vendors located in each region of operation, which appeared to be the source of inconsistencies with respect to products and services offered to the different GE Energy locations."

"The financial impact of implementing administrative and engineering controls to mitigate ergonomic risks is small when compared with the direct costs associated with a single worker's compensation claim for a low back injury and surgery (estimated at \$18,000) and indirect costs, such as lost time, that are incurred by a company."



GE Energy's Office Ergonomics Training Center in Beijing, China

Empowering a Healthy Workforce

The global distribution program has been in place since early 2006, and Peck says it has already proven successful. "Though the program is still relatively new, we've already begun sharing our best practices with the rest of the company. So far we have received a very warm reception."

Though Peck led the charge each step of the way to establishing GE Energy's global ergonomics distribution plan, she's quick to point out that it did not happen because of one individual, rather "it was a vision that took a lot of hard work on the part of Humanscale, GE EHS and GE Sourcing."

As just a few examples of its positive impact, she cited a recent task lighting implementation at the Atlanta headquarters, and the support of three GE Energy Office Ergonomics Training Centers in Beijing, Shanghai and Malaysia.

Cost Justification for Ergonomics at GE Energy

"Our ergonomic solutions should measurably improve the health and safety of our workers or we'll never get it approved," she says. "Companies today don't have money just to spend on nice things, they have a bottom line."

Peck says a critical component of her work—before any lighting, seating or keyboard trays are ever implemented—is using a formal justification process that follows the Six Sigma

"Our ergonomic solutions should measurably improve the health and safety of our workers or we'll never get it approved," she says. "Companies today don't have money just to spend on nice things, they have a bottom line."

DMAIC (Define, Measure, Analyze, Improve, Control) process for large projects to evaluate the cost and effectiveness of the controls. This, she says, is critical to gaining management and employee support.

Positive Returns

The primary goal of GE Energy's proactive ergonomics program is simple: improve the quality of life for employees and reduce the number of musculoskeletal disorder (MSD) incidences and the costs associated with MSDs.

"The financial impact of implementing administrative and engineering controls to mitigate ergonomic risks is small when compared with the direct costs associated with a single worker's compensation claim for a low back injury and surgery (estimated at \$18,000) and indirect costs, such as lost time, that are incurred by a company."

Thanks to Barbara Peck's vision and leadership, ergonomics is proving to be a very smart investment for GE Energy.



Lifecycle Ergonomics

The role of ergonomics in the workplace—from initial design through implementation of ergonomic initiatives



at issue

“When you facilitate the workers’ feeling that they are participants in adjusting and controlling their work environment, there is clearly a **positive impact** on their performance.”

—Jim Dolislager, Verizon Wireless

Earlier this year, a group of professionals representing architecture and design, ergonomics consulting, and purchasing gathered at Humanscale’s San Francisco showroom to share unique perspectives on the relevance of ergonomics in their work—from product design to implementation.

With over 100 in attendance, four panelists discussed the design of office and retail spaces, procurement and implementation of products and furniture for those spaces, how workspace layout affects us organizationally, and overcoming the challenges to implementing ergonomic initiatives within organizations—the Lifecycle of Ergonomics.

“Each of our panelists does ergonomics at different points along this lifecycle, and we’ve brought them together to share their experiences and roles in creating healthy, ergonomically sound workspace,” explained Dan Cannon, *Design at Work* editor and panel moderator.

Designing Healthy Workspace

David Meckley, senior designer with Huntsman Architectural Group, spends much of his time designing corporate office space and described his involvement with ergonomics as “before the fact,” as it often occurs during the early stages of workspace design.

“Ergonomics is a critical part of our work, and one of many elements considered when going into a project,” he said. “One of the most important things I do is making sure the space is as efficient and as easy for employees to work in as possible.”

Although ergonomics is part of his approach, Meckley added that clients don’t regularly request ergonomic design beyond the iconic office chair, “and many CFO’s perceive ergonomic products as nothing more than a costly spend.”

Meckley sees this as an opportunity.

“This is where we can help clients understand how ergonomic design can be a positive for their businesses, and even help solve issues such as churn, turnover and decreased productivity.”

Ergonomics in Broader Context

Andrew Imada, president, A.S. Imada & Associates, certified ergonomist and specialist in human and organizational change, brings a “macro-ergonomic”

perspective to the table, and to his work, which involves helping companies implement a variety of organizational solutions including ergonomics.

While Imada shares Meckley's commitment to helping clients understand ergonomic benefits for their businesses, he said most of the time clients just want him to come in and fix the problem.

"Whether it's reducing accidents, injuries or product loss, they just want it done. But it's not enough just to fix it," he explained.

Imada says it's a matter of simply listening to the clients to fully understand their needs.

"As professionals, we're obligated to try and understand the context of their problem, to really listen and put ourselves in their place before coming up with a solution."

Imada admits this is easier said than done, and it's often challenging to help people understand why they'll be better off with a different product or a new way of doing a task.

"You really have to give them a reason why, even though they've been doing a task this way for 25 years, there is a better, more efficient way to do it."

Reactive to Proactive

On the other end of the ergonomic lifecycle is Kim Garner, ergonomics program manager, environmental health & safety, for Apple Computer, Inc. Though she heads Apple's multi-faceted ergonomic program, Garner said much of her work is "after the fact," and often involves retrofitting for ergonomic solutions.

"At Apple, in our stores, any ergonomic solution has to be both functional and aesthetically pleasing, and is always designed around the customer experience."

Though her work regularly includes retrofits—after the design and procurement of the call center or retail furnishings—Garner adds, "it still

serves the lifecycle in a positive way because our solutions from this end of the spectrum ultimately go back into our design process."

Comfort, Productivity and ROI

As procurement manager of office furniture for Verizon Wireless, Jim Dolislager brought another unique perspective to the discussion. Always following the ergonomic credo of fitting the work environment to the worker, Dolislager oversees large capital investments in products and furniture for Verizon's stores, call centers, and corporate workspace.

In addition to inherent ergonomic design, he said that the equipment they bring in needs to be high quality to endure wear, tear and retail use, and ultimately justify their investment.

"At Verizon our context includes investing in equipment with adjustability features and good ergonomics, but we have to consider all players during the procurement activity...our offices as well as our retail spaces."

According to Dolislager, the benefits of maintaining high ergonomic standards in Verizon's office and retail furnishings have been obvious—even measurable—and include increased morale and productivity. Both, he said, result from ergonomic design and simply engaging their workforce during the implementation process.

"When you facilitate the workers feeling that they are participants in adjusting and controlling their work environment, there is clearly a positive impact on their performance."

A Valuable Dialogue Has Begun, And Must Continue

"By broadening the scope of the ergonomic discussion, as we've done here, we all gain a better understanding of the relevance of ergonomics in our work," said Cannon. "We believe ergonomic design is essential, and we'll discover ways we can all work together more effectively to reach the end goal of healthy, ergonomically sound workspace."



at issue

What:

Lifecycle Ergonomics: From Design to Implementation was presented in San Francisco on February 8, 2006. Humanscale hosted the event at their San Francisco showroom and it was cosponsored by ErgoSolutions Media.

Who:

Moderator Dan Cannon, *Design at Work* Editor and founder of ErgoSolutions Media, spearheaded the panel, which included Jim Dolislager, Procurement Manager, Office Furniture for Verizon Wireless; Kim Garner, Ergonomics Program Manager, Environmental Health & Safety for Apple Computer; Andrew S. Imada, President, A.S. Imada & Associates; and David Meckley, Senior Designer at Huntsman Architectural Group.

Topics:

The discussion included how to best meet the health and comfort requirements of today's office worker while simultaneously examining the relevance of ergonomics in day-to-day life, the growing implementation of corporate ergonomics programs, and the impact of ergonomically sound workspaces and products on day-to-day productivity.

The next Lifecycle Ergonomics panel will be held September 29, 2006 at IIDEX/NeoCon Canada.

On Design with Niels Diffrient

Design at Work Editor Dan Cannon's conversation with legendary industrial designer, **Niels Diffrient**



on design

Niels Diffrient brings a unique blend of knowledge and skills to his work. In fact, his uncompromising approach—combining human factors, engineering and visual aesthetics—is truly rare among designers today. Staying true to the goal of ergonomic perfection, Diffrient has consistently looked past frivolous trends and designed one compelling product after another, including the Freedom and Liberty Chairs, and the Diffrient Task and Work Lights—all for Humanscale.



What progression do you follow in your design process?

In every product I design, I usually start out with a human factors benefit of some sort—improving work circumstance or more comfort. Then I'll look at engineering new mechanical solutions. For instance, if I know a better way for, say, an arm-rest on a chair to work, then I'll develop the mechanical ways to satisfy that, and then integrate it all into a good aesthetic combination. Everything I do I do with a balanced development—the give and take in each of the categories of human factors, technical engineering, and then the final development of an attractive appearance as well as aesthetic function.

Why are efficiency and the use of recyclable materials important in your design work?

It's hard to do any amount of engineering without using efficiency as a guide, you're really not engineering if you're not being efficient. And it's not just a case of doing something with the fewest number of parts, as in the case of the chairs I designed that are lighter than anybody else's chairs with equivalent features. I simply don't do what most people do when designing a chair, which is to shape the appearance of it then leave the mechanism to an engineer who has to put it all within a plastic box to hide the mechanism. Our entire chair is a mechanism and everything is exposed.

So, efficiency is a fundamental part of designing a product, and of course if you're looking for efficiency you're also choosing a material that is most readily available and that can be reused. A lot of our products are aluminum, which is readily available and completely recyclable.

Discuss energy efficiency and bulb technology in the lighting you've designed

The lamps that I developed for Humanscale began with a study of the light sources and the objective of being a flexible task light for use, in many cases, by people operating computers.

We determined that compact fluorescents were the best available light source in almost every aspect—energy use, heat, and light output. We could get light equivalent to a 100-watt incandescent by using a 26-watt fluorescent, and using a quarter of energy and a quarter of the heat. And it lasts 10,000 hours instead of 1,500 hours. At the moment, it's even better than the current status of LED's. I say at the moment because it will certainly change, but for the near term the compact fluorescent is the most efficient personal source of light that you can get.

What about colors?

The bulbs come in four different colors from very cool bluish to a quite warm reddish-yellow light. We choose a warm, middle grade bulb to supply with the lamp that is in fact very well balanced. It is a little cooler than an incandescent but certainly not as cool as a bluish fluorescent. The quality of light I think is excellent.



The Diffrient Light was designed to be incredibly easy to use, offering tremendous adjustability with minimal effort. In addition, it was designed with state-of-the-art electronics and compact fluorescent technology to offer ideal illumination, low energy consumption and a cool working environment for the user.

And bulb sizes?

Compact fluorescents come in various sizes and there are a couple of smaller ones that I normally use. The most common is the PL 13 which is a 13-watt and roughly equivalent to a 40/50-watt incandescent bulb. We also use the PL 26 which is equivalent to the 90/100-watt incandescent, but with only a quarter of the heat and power use. It is a very good light source. Most lamp designers don't bother with it because it demands so much more when designing the head of the lamp, which is the reflector and the shrouding of the bulb. So they use the most popular high intensity bulbs, which put out a great deal of heat to get a 100-watt equivalent. They're tiny and you can design a nice small light source but you'll burn yourself if you touch the bulb or reflector.

Any discussion of the "office of the future" must include task-appropriate lighting and reducing overall energy consumption

Without question. Putting light in the ceiling is the most inefficient way of lighting the workplace, so it just makes more sense to lower the ambient light and use the adjustable task light for your principle seeing tasks. And the statistics on what you'll save in energy are profound. If you look further into the picture, you'll find that lighting is generally 25% of all energy use.

Do you see progress in this direction?

There is some movement in that direction. However, many architects and interior designers are still reticent—it's so easy just to put a bunch of fluorescents in the ceiling. But it is a bad way to go.

What were some of the constraints you addressed with the Diffrient Lights?

Once we determined the light source, there was a question of designing a support mechanism that would allow the light to be easily placed in the most beneficial position. That was the sole determinate of the support system, not what was going to be some kind of trendy looking thing, but really more a matter of a completely well balanced system for moving the light source in a broad range of positioning so you can put the light exactly where you want it without having to fuss with things.

I bought other lamps that were popular at the time and I found them totally lacking in this. The best seller was an Italian lamp, and first of all it was incandescent so it was too hot. Secondly, it wasn't very proficient—I constantly had to adjust the friction on the joints so it didn't drop and fail to hold its place. Thirdly, it was limited in its range.

My lamp design moves over a broad range of positions. It uses a parallel arm system, which means that the lighting always maintains the same level no matter where you position it, and it's perfectly balanced.

If you look at office lighting and furniture, it's evident that many designers ignore, or worse, don't even know what the constraints are, and therefore don't design with the goal of a creative solutions to constraints.

Yet even with great function, there's always competition from products that place style over function and efficiency

And that's the complicating factor.

on design

After meeting all these constraints, you still have a lamp that competes with another one that doesn't pay any attention to the constraints and is just designed strictly for looks.

Do you feel we need a greater awareness of ergonomic design in everyday things?

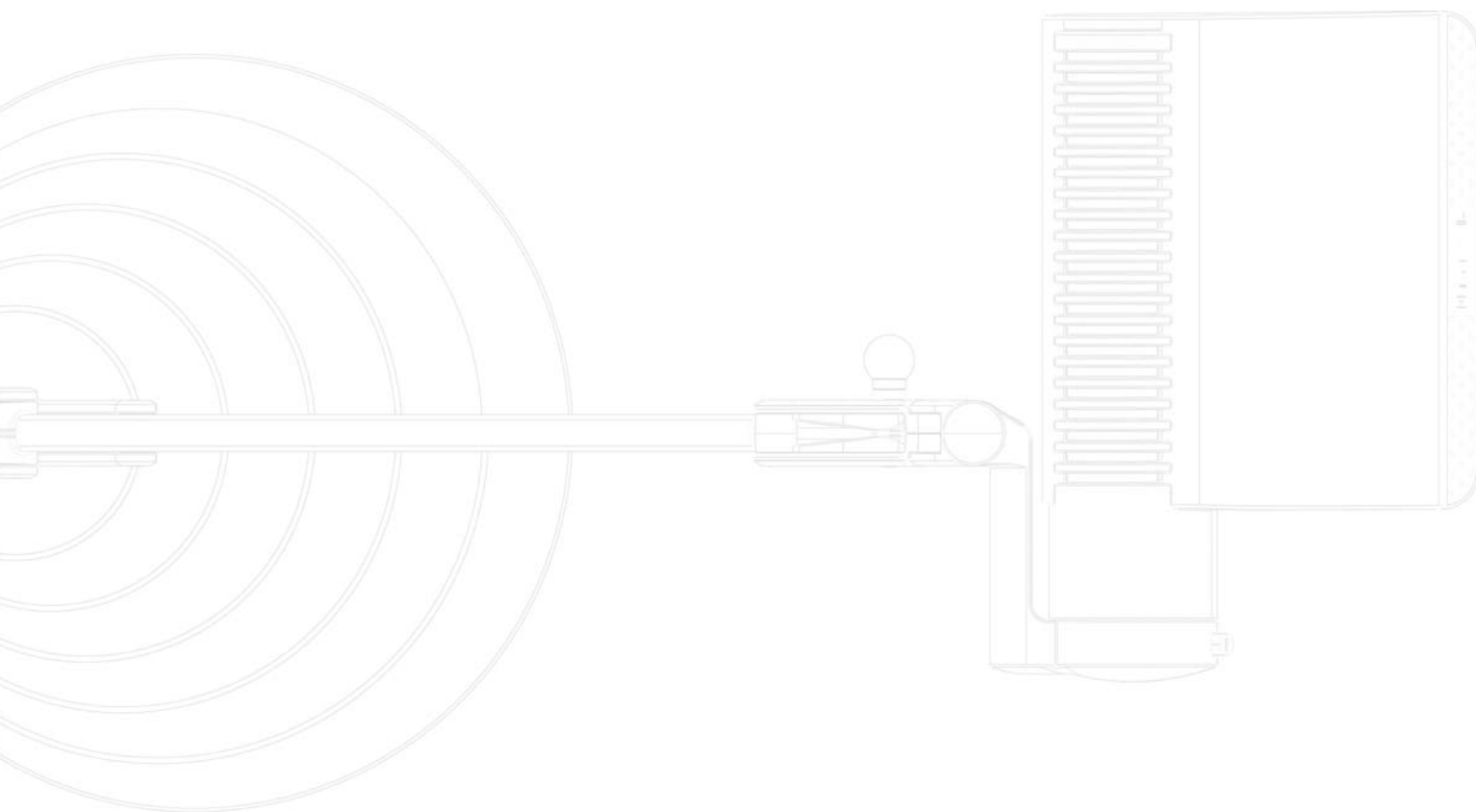
Oh, no question. The more that we're educated as to how we can make our lives more efficient and comfortable, obviously the better. But that's a big dilemma, how do we do that? I point things out to friends, and they've never even considered that they can choose better products that are more efficient and helpful in their lives. So there's a big challenge to educate people. But they don't want to hear the technical side of it. You start talking the technical end of things and you can watch the blinders drop in front of their eyes. Though sometimes it can be shown in another way—and that's where the appearance comes in. We've got to learn to make technically correct products that are compelling, and that people want.

How can designers help move this forward?

From my viewpoint, most of design is reading and answering the constraints in an elegant way, and not compromising.

"**Modern lighting solutions** must address the inherent conflicts between creating lighting that works for computer screens and lighting that works for paper tasks."

— Alan Hedge, PhD, CPE,
Director of the Human Factors and Ergonomics Laboratory at
the Cornell University Department of Design and Environmental Analysis



Our Design Philosophy: At Humanscale, we believe the best designs in the world are based on purpose and function. If a design solves a functional problem as simply and elegantly as possible, the resulting form will be honest and timeless.



US Headquarters
11 East 26th Street
8th Floor
New York, NY 10010
212 725 4749
212 725 7545 fax

Customer Service
10 Inverness Drive East
Suite 100
Englewood, CO 80112
800 400 0625
303 858 9915
303 858 9916 fax
info@humanscale.com

European Headquarters
16 Britton Street
London EC1M 5SX
+44 207 566 7990
+44 207 566 7991 fax
info@humanscale.co.uk



Recognized by I.D. Magazine as
one of the 10 "Best Companies"
worldwide that help push design
forward.