ENCELIUM

LIGHTING CONTROL FOR THE SMART BUILDING

ECS:

ADDRESSABLE LIGHTING CONTROL AND ENERGY MANAGEMENT SYSTEM

TAKE CONTROL OF YOUR LIGHTING ENERGY COSTS

ECS:

The Energy Control System, is the world's first intelligent addressable lighting control system designed with 4 underlying philosophies in mind:

- **> Extraordinary energy savings**
- **> Optimized lighting quality and workplace ergonomics**
- **> Simplicity of design, installation and use**
- **> Immediate return on investment**

ECS was designed from the ground up as an integrated lighting control and energy management system that delivers the shortest possible payback from energy savings while at the same time improving lighting quality and personal lighting comfort. Addressable fixture level dimming and switching controls coupled with easy to use control software allow ECS to respond dynamically to the ever changing characteristics of a building by always providing the right amount of light when and where required. By integrating and simultaneously employing six different energy management strategies in one seamless system, ECS virtually eliminates wasted energy from lighting.

ECS puts ultimate control of lighting at a facility manager's finger tips through the simple click of a mouse. Lighting now truly becomes a "controllable" energy load enabling facilities to incorporate lighting as part of a portfolio wide energy management strategy. Explore the power of ECS and learn how to **take control of your lighting energy costs**.

HOW CAN YOU BENEFIT FROM THE POWER OF ECS?

Reduce lighting energy costs by 50% to 75% resulting in lower building operating costs, improved cash flow and enhanced building value.

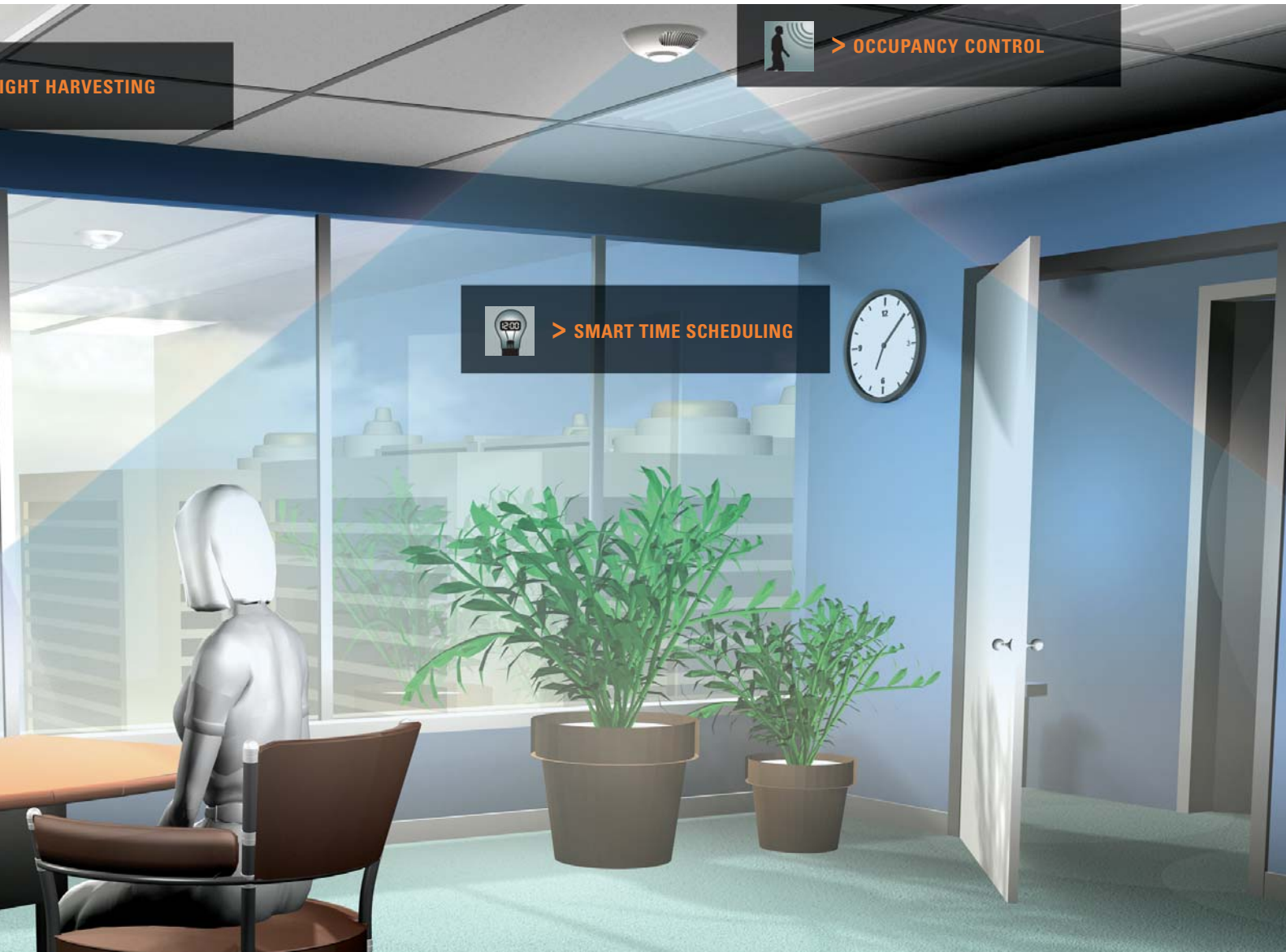
Improve workplace ergonomics, occupant productivity and tenant satisfaction by optimizing lighting quality and providing individuals with the ability to control their work environment through ECS's personal control feature.

Promote your building's "Green" image and enhance your ability to achieve LEED certification. ECS can contribute towards meeting the requirements of up to 22 LEED points in 5 of 6 LEED categories.

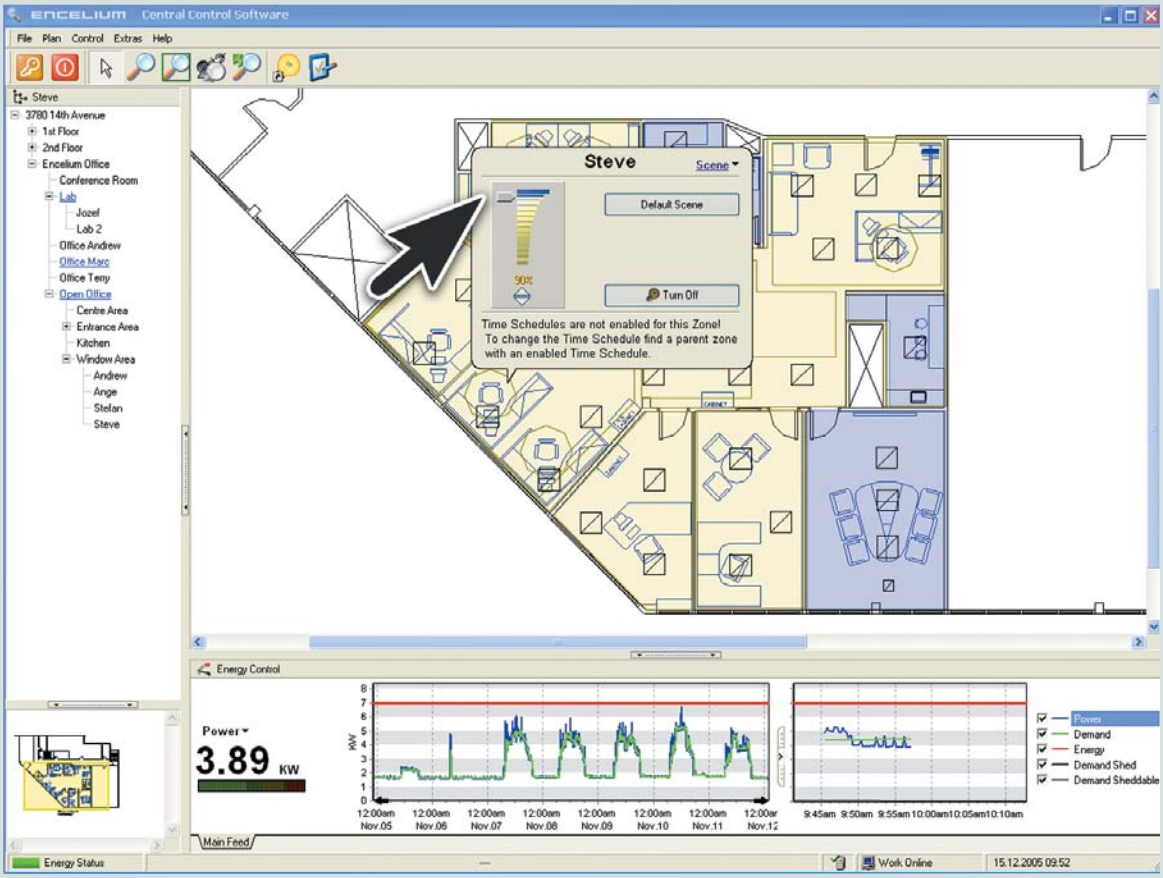
Comply with Building Codes and Energy Efficiency Incentives. ECS facilitates compliance with Title 24, ASHRAE 90.1, EPACT and various utility rebate programs.

Dynamically adapt your lighting system to changing building uses. Changes to workspace use, varying lighting requirements or reconstruction can easily be addressed through ECS's control software without ever having to physically alter wiring or move hardware.

Use lighting control as the cornerstone of a facility wide energy management strategy. With the ability to shed lighting load dynamically, ECS can be used for energy peak shaving or demand response strategies. ECS can also integrate with building automation and energy management systems.



POINT, CLICK, CONTROL, SAVE.



LIGHTING CONTROL MADE SIMPLE

SIMPLE TO DESIGN/SPECIFY: ECS utilizes a universal interface module that connects to standard lighting components such as low voltage dimming and non-dimming ballasts, occupancy sensors or photo sensors. Software based zone configuration is independent of lighting circuits or switch legs making design and specification simple and virtually error free.

SIMPLE TO INSTALL: Interface modules can be installed in a daisy chain wiring topology utilizing pre-fabricated Cat. 3 cable with RJ45 connectors. Connection to a fixture or sensor is as easy as “click and go” for the installer with no pre-addressing required.

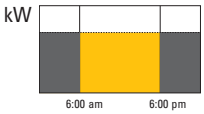
SIMPLE TO USE: Central control software enables facility managers to control each fixture in a building either from their desktop PC or remotely via the Internet. Easy to use floor-plan based software allows for simple navigation or system configuration.

SIMPLE TO ADAPT: Since each light fixture and sensor in a building is controlled individually, system reconfiguration due to changes in workspace use or tenant construction is done entirely through ECS software. Association of fixtures to zones can be changed by a simple “drag and drop” without ever having to physically re-wire or move hardware again.

MAXIMIZE ENERGY SAVINGS:
SIX STRATEGIES FOR LIGHTING CONTROL

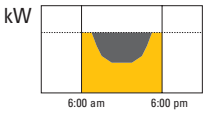
ECS is the only lighting control system that simultaneously employs six different energy management strategies on a facility wide basis to realize maximum energy savings. These strategies work interdependently and are cumulative in their effect on overall building energy savings. The graphs below illustrate typical energy savings from each of these strategies in a given space.

SMART TIME SCHEDULING. In areas of a building where occupancy control is not appropriate, time scheduled switching or dimming of lights can be employed for zones as small as a room or even individual light fixture.



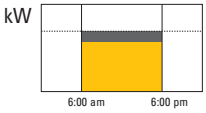
10-50%

DAYLIGHT HARVESTING. Through the use of photo sensors, light levels are automatically adjusted to take into account ambient natural sunlight. Appropriate light levels are maintained and artificial lighting is dimmed when necessary.



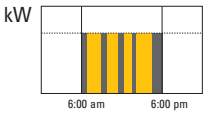
17%

TASK TUNING. Setting default (maximum) light levels to suit the particular task or use of a workspace in order to eliminate over lighting.



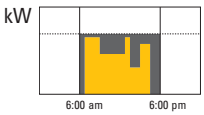
28%

OCCUPANCY CONTROL. Through the use of occupancy sensors, lights are automatically turned on or off or dimmed based on occupancy detection.



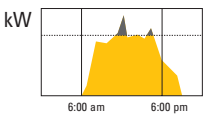
35%

PERSONAL CONTROL. Through the Personal Control Software, individuals can control (dim) the light levels in their workspace to suit their personal preferences from their desktop PC.



38%

VARIABLE LOAD SHEDDING. The automatic reduction of electrical demand in a building by shedding lighting loads dynamically (through dimming or switching) either to shave peak demand or reduce energy consumption. Load shedding can be done selectively by lowest priority areas first.



10%

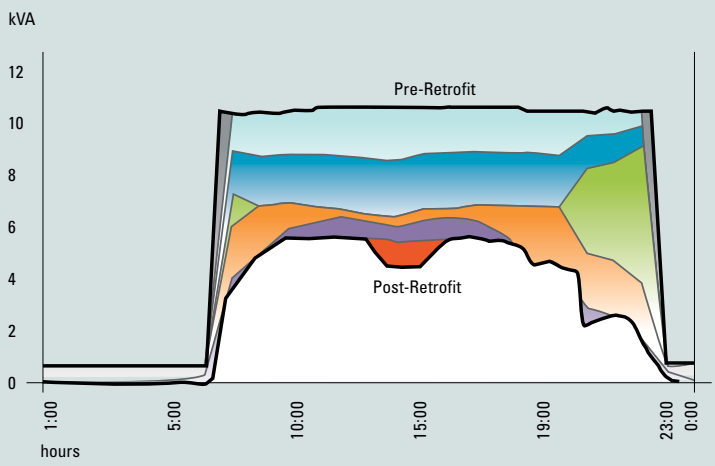
COMBINED ENERGY SAVINGS. Potential cumulative savings from above strategies.

71-79%
combined

CONTRIBUTION OF SIX STRATEGIES TO ENERGY SAVINGS

The graph on the right illustrates how each of these 6 strategies contribute to overall building energy savings and the combined impact on lighting energy consumption (actual results taken from an Encelium retrofit project – Toronto, Canada).

- TASK TUNING
- PERSONAL CONTROL
- SMART TIME SCHEDULING
- OCCUPANCY CONTROL
- DAYLIGHT HARVESTING
- VARIABLE LOAD SHEDDING



Colored areas between the respective load profiles (Pre-retrofit and Post-retrofit) represent typical energy savings from each strategy over a 24 hour period, averaged over 1 hour intervals.

REDEFINING LIGHTING CONTROL

When we started Encelium we wanted to define our business as being small enough to innovate but big enough to fundamentally "change the game". Lighting control technologies have historically lagged behind other automated building control systems even though lighting often represents the single largest energy load in most commercial buildings. By starting with many years of lighting and control system experience, a clean sheet of paper and no legacy systems to design around, we believe that we have achieved our goal of "changing the game" with the introduction of the Energy Control System (ECS).

Conventional efforts to control lighting for the purpose of energy management have generally been restricted to switching lights on and off using either occupancy sensors or relay based lighting panels. These are one dimensional strategies that do not take into account factors such as available natural sunlight, divergent and changing building uses and personal lighting preferences of occupants let alone the specific energy requirements of the building. ECS takes a holistic approach to controlling lighting by utilizing every energy management measure possible to deliver ultimate savings but never at the expense of lighting quality. Occupant comfort and personal lighting preferences are always paramount in the ECS decision making hierarchy. With ECS, occupants have control of their own work environment, facility managers can control every facet of their lighting system and energy managers can control lighting as part of a facility wide energy management strategy.

Advanced lighting controls represent the next generation of lighting efficiency technology and Encelium is committed to remaining at the forefront of this technological revolution. Encelium is also an active player in the exploding sustainable building technology marketplace and will continue to promote an environmentally responsible approach to building design. We invite you to contact our rapidly growing international network of distributors, systems integrators and sales representatives and learn more about how ECS truly **redefines lighting control**.

Picture below: The Toronto General Hospital realized a 74% energy savings from lighting using ECS in the R. Fraser Elliott Building in Toronto, Canada.

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