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节能、环保和健康相以致的自然光集中照明系统

示范指南

集中自然光室内照明（Core Nature Indoor Lighting，CNIL）

SunFlower 集中自然光室内照明，单台能向室内提供达100,000流明的天然照明，能源成本为零。它迎合了世界新建筑标准标的2030年室内昼时照明“零排碳”的要求。集中自然光室内照明的样阳光聚焦，以现代伺服系统根据全球全年日照大数据统计算法优化进行自动跟踪、收集和向室内分布阳光。它的制造工艺兼容于传统机械和金属加工业，为其添加了贡献现代照明的高附加值。它的制造过程不像半导体节能照明那样涉及贵重耗材或消耗自然资源。这种新兴照明系统把阳光重新回归给依赖其生存繁衍和进化的都市化人类。集中自然光室内照明用光导管道分配和投射平行光到室内的每个角落。在设计和结构上，室内自然光照明不再必须从建筑的外沿用昂贵的玻璃采光，而且直接把大量阳光传播到建筑的核心。

Delivers up to 100,000LM from on single sunlight collector, with 0 energy cost. It fulfils the trendy world new architecture standard of ‘2030 all natural indoor lighting with 0 carbon emission. ONIL has concentrated auto-tracing sunlight through a powerful collector designed and configurable with optimal algorithm-controlled modern server system, based on big-data survey statistics of global daylight data. This new approach of high-effeciency utilization of nature lighting brings sunshine back to urban mankind who has lack of reliable sunlight to keep continuous healthy evolution and reproduction. CNIL’s manufacture processes retrofit many conventional metal processes, saved and added value to the old industry. Its manufacture does not consume expensive materials or high-volume nature resources (such as semiconductor process does for producing LED components). CNIL uses light guide tubes to distribute parallel flood light into every part of indoor spaces. Not only nature light no longer only can penetrate through class on buildings’ peripherals, but now also can shine intensively into core spaces of buildings.

先进等离子体照明（Advanced Plasma Lighting, APL）

APL 先进等离子体自然光谱节能照明引擎，单盏能像室内提供达100,000流明的接近自然光谱照明，电能转换率达每瓦特130流明以上。先进等离子体照明引擎使最高效和简单小型化的灯具光学设计成为可能。不仅它的光谱最接近阳光，它无“炫光”和杂散和基于点光源的直接平行投射，时其光学性能超过所有传统光源和灯具（金卤灯、高压钠灯、溴钨灯、荧光灯）和最新的节能灯与LED。先进等离子体照明引擎的制造过程也是最简约，与老式的等离子体照明相比，先进等离子体照明引擎不使用石英晶体、陶瓷或三氧化二铝合金等作为功率振荡源，就能实现更高效稳定的等离子体电光转换，因而并不消耗更多的制造能源和材料。先进等离子体照明引擎终于结束了传统灯具必须离散安装或矩阵模组的低投光效率和电器线材耗费。

Delivers up to 100,000LM from one single point light source, with 130LM/W energy efficiency. APL Engine enables the simplest design of high-efficiency and compact lamp optics and fixtures. APL Engine's spectrum is the most matching source to natural lights. Its no-glare, direct-flood lighting out-performs all conventional light sources and fixtures, such as High Intensity Discharge (HID), High-pressure Sodium (HPS), Halogen, Fluorescent, and the latest energy-saving light and LED Array. APL Engine's manufacture is the most simple and thrifty, out of other Plasma Lighting devices, by which well controlled plasma lighting is realized without adopting quartz, ceramic or Al2O3 to form the high-power resonator, voiding uses expensive materials and their resource-energy consuming process technologies. APL finally realized centralized light-engine, ended the convention of distributed or arrayed lighting components in indoor lighting along with trade-offs of low-efficiency. It no longer needs to consume electric apparatus and wiring as conventional lighting system does indoor everywhere.

有机室内照明（Organic Lighting）

组合以上两种光源（CNIL和APL）就在所有层次上展现了承诺真正健康和节能的下一代照明方案。这是**节能、环保和健康相以致的自然光集中照明系统**。

综合各个方面的节能和健康照明系统需求，国际制造工程（美国）合伙人公司的第一轮示范推荐如下功能和规范（草稿）：

1) 3层平顶写字楼，建筑面积3000平米，可包含一层地下空间（停车、储藏或办公空间）。可以是包括办公楼、出入口和庭院的组合设施。
2) 安装全套Sundolier阳光自然照明系统，在阳光收集器端安装APL等离子自然光谱引擎，两种光源共享一套光线分配系统，以实现全天侯和24小时健康光谱的节能照明系统。
3) 实践无线光导管分配系统：实际测算电器和布线的材料节约。室内不再形成分布的照明电力负荷，只有遥控和电机驱动器驱动的光学器件（开关，分配器，遮光器，过滤器）。实验闭环传感驱动器和智能照明系统。
4) 实验自给自足的独立照明系统：有足够的空间用于进一步安装大规模的能源采集和转换（转化太阳能为电能存入电池阵列以满足夜的额度电光照明）。
5) 实验采集不用红外过滤的阳光热能，以补充日间室内供暖。实验太阳能直接驱动的高效空调系统。
6) 设施农业：用同一系统的阳光采集和等离子体补搭建的新型温室。可以实现垂直无土栽培，在灌溉区不再有电线；轻结构取模块化代温室，使用轻型绝热材料，避免昂贵和沉重的玻璃窗和聚合物遮光板。无玻璃的温室加装在在平顶建筑，更简易、安全和可行。
7) 夜晚室外空间全部用先进等离子自然光谱的节能照明。

Organic Light

The combination of CNIL and APL is enabling the next-generation energy-saving and healthy lighting solutions in all levels. By consolidate field demands, the first draft of Organic Lighting Solution, a set of demonstration, specifies a modified office building featuring the following:

1. A 3-story modern office building with flat roof, don't have to be rich in glass windows. It is recommended to be about 3000sqm building-area, may have a sub-ground level for office/storage/garage, and may be a campus including office building, entrance and courtyard.
2. Complete installations of Sundolier Natural Indoor Light system; sharing the same light distribution system with high-power plasma lighting (APL Engine is installed at the Sundolier collector end), realizing 24-hour and weather-tolerate energy-sacing and healthy-spectrum lighting.
3. Experiment and survey material savings due to wireless light-guide distribution system: there is no lighting power load indoors, and no need of a grid of electric apparats and wiring distributed indoors, only remote-control upon motor-actuators of optical devices (switch, divider, shutter and filter, etc.). Experiment close-loop sensor-actuator and intelligent lighting systems.
4. Experiment self-sustainable indoor lighting, with capacity to allow installation of large-scale energy-harvest functions (solar engorge form Sundolier Collector to be converted to charge battery array, storing energy for night lighting).
5. Experiment combined features of not-filtered sunlight heat collection, through the indoor light distribution to deliver IR radiation, supplementing regular daytime heating. And experiment combining the new solar-direct powered air conditioning system.
6. Facility-agriculture: greenhouse featuring collected and guided sunlight, and extra hours of APL Engine lighting, share the same system. Light-guide distribution allows vertical arrangement of planation, no electric wires near watering conditions. Light-weight structure: replacing expensive and heavy glass screens and plastic shades with light-weight insolation materials. The no-glass-screen modular green house is simpler, lighter and safer to be installed on regular flat roof.
7. After day-time, all indoor and outdoor spaces are lighted by natural-spectrum and energy-saving APL Engines.

