

CPFilms: “Green” light for window films



Growing numbers of ESCOs (Energy Service Companies) and “green” designers are persuaded of the value of integrating solar control films into many of their energy reduction packages. Information and experience from projects around the globe, such as those depicted in this article by CPFilms, are making clear their cost-effectiveness, and field implementation is now an increasingly visible option for all decision-makers.

Global warming or not, the economic and environmental pain is real. Even if it were not true that the globe is warming, claimed to be caused from our growing consumption of fossil fuels, there is no question about the tremendous rise in the use of these fuels and the increasing costs to the bottom line of personal and corporate energy budgets. These fuels are becoming more costly with huge rises in demand in rapidly developing countries. One can debate endlessly about the impact of CO₂ as a greenhouse gas on rising average temperatures, the increasing strength of hurricanes, melting of glacial ice, rising oceans levels, and the growing risks of direct



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continued

environmental damage from oil exploration, distribution, and processing. But the argument comes to an end when the issue resolves simply to whether we can afford the “price” (however defined) of burning more fossil fuels at ever-increasing rates.

THE BANDWAGON IS PAINTED GREEN

Are there simple ways to reduce consumption and save money? Indeed there are. This article will focus on one way to improve the performance



LLumar film was able to reject nearly 70% of the solar energy impinging campus windows, helping to reduce the need to operate costly airconditioning equipment. The low-E film also improved the window insulating properties by 34%, further reducing heat gain in the summer and heat loss in the winter.

Fresno University
Thomas Administration Building
7.7 per cent electricity savings,
4.1 per cent heating fuel savings,
3.7 years payback

of glazing, a way that is not only simple, but also painless, passive, and proven — in short, “green.” The use of LLumar solar control window films is soaring because of its demonstrable effectiveness, making the product a potential component of nearly every green building retro-fit design plan. Indeed, the growth of the green building

movement internationally will surely see the widening use of LLumar films in the coming years. This article explores the green building movement and the justification of solar control films’ inclusion into green building plans.

THE GROWTH OF GREEN ORGANIZATIONS

Several organizations around the world are addressing the critical connection between global warming and ever-rising energy usage, attempting to reduce global demand for energy, improve energy efficiency, establish sustainable building development and promote “green”

(environmentally-friendly) buildings. Several such organizations of note are the Australian Business Council for Sustainable Energy, the China Sustainable Energy Program, Sustainable Energy Europe, the US Green Building Council’s LEED (Leadership in Energy and Environmental Design) Green Building Rating System®, and the US ENERGY STAR® Program.

The LEED Rating System, for example, is a consensus-based US national standard for developing high-performance, sustainable buildings. LEED was created to:

- define “green buildings” establishing a common standard of measurement;
- promote integrated, whole-building design practices;
- recognize environmental leadership; and
- raise consumer awareness of green building benefits.

LEED emphasizes state-of-the-art strategies for energy efficiency and sustainable site development, and promotes expertise in green buildings through a comprehensive system offering project certification — an important part of which is building energy-efficiency.

ENERGY STAR is a US Government-sponsored programme helping to save money and protect the environment through energy-efficient products and practices. ENERGY STAR offers a proven energy management strategy that helps measure current energy performance, set goals, track savings, and reward improvements. Because of this emphasis on protecting the environment through improving energy-efficiency, LLumar became an ENERGY STAR partner in 2003.

SOLAR CONTROL FILM: FINDING ITS PLACE IN THE SUN

Window films have a 40+ year history as a retro-fit glazing product. And, over the decades, steady improvements in deposition technology, adhesive systems, and scratch resistant surface coatings have resulted in truly viable products of impressive performance, appearance, and longevity. Optically clear polyester films that are UV-stabilized, hard-coated, and encapsulate sputter- or vapour-depositions of any number of metals and oxides or IR-blocking nano-particle dispersions are making it painless to upgrade the solar performance of standard glazing systems. These performance films offer overall energy savings for qualified buildings of 5-10 per cent, and common payback periods of 1-4 years.

ENERGY SERVICE COMPANIES SEE THE GREEN LIGHT

Leading the charge towards greener and more energy-efficient buildings is a group of companies known as Energy Service Companies, or ESCOs. Some of the world’s largest ESCOs are Johnson



Fresno University
Education Building

Utilized exterior reflective window film, USD
28,000 annual savings, 3.2 years payback

Controls, Honeywell and Siemens. Currently there are ESCO organizations in many parts of the world, including the United States (www.naesco.org), Canada, Mexico, Brazil, China, Asia, Australia, and of course, Europe, where energy-efficiency has been the mantra in industry, business, and society for many years.

Typically, ESCOs are able to achieve 20-40 per cent reductions in facility energy use for their customers. ESCOs normally operate on the principle of minimal cash outlays on the part of their customers by sharing a portion of savings generated from projects they develop. This type of arrangement is an especially attractive scenario for a facility, since in addition to minimal capital outlay, energy savings are guaranteed. So, in the unlikely event that energy savings promised do not materialize, the ESCO writes a check to the facility to cover the savings shortfall. This type of transaction is also referred to as "Performance Contracting," since the ESCO is only paid if the programme performs as promised.

Energy-saving measures used by ESCOs often include high-efficiency lighting, motors, and heating/airconditioning equipment, as well as sophisticated energy metering and centralized energy-management systems. Reducing summer solar heat gain and winter heat loss through windows by using LLumar window films is also an important part of an effective building energy-savings and green building strategy employed by many ESCOs.

LLumar, manufacturing and distributing its products globally, has been actively involved in ESCO and green-building projects over the past several years, due to the exceptional energy-efficiency of its solar-control and insulating window films. The ability of these products to improve building energy efficiency, design aesthetics, occupant comfort and outward views hits the mark of key scoring components for "green building" specification.



Fresno University
Peters Business Building

Annual savings with window film
USD 15,000, 2.4 years payback

CASE STUDY: FRESNO STATE UNIVERSITY

One ESCO project involving LLumar window film took place in 2005 at Fresno State University, California, the United States. Fresno State is one of the 23 campuses of the California State University, one of the largest systems of higher education in the world. Fresno State retained NORESKO, one of the largest ESCOs in the United States, to design and deliver a cost-saving strategy that would restrain ever-rising energy costs. NORESKO turned to LLumar for a solution, and through its dealer network, LLumar provided a building-envelope improvement solution.

Following an energy savings evaluation based on US Department of Energy standards and in partnership with NORESKO and University engineers, the plan was to install 9,300 square metres (100,000 square feet) of LLumar low-emissivity (low-E) window film on 14 campus buildings. This LLumar film was able to reject nearly 70 per cent of the solar energy impinging campus windows, helping to reduce the need to operate costly airconditioning equipment. The low-E film also improved the window insulating properties by 34 per cent, further reducing heat gain in the summer and heat loss in the winter.



Temple College
Nursing Education Center

The energy savings yielded by window film installation at Fresno State amounted to USD 135,000 annually, or six per cent of campus energy usage. The energy savings provided by the LLumar film will help Fresno State recoup their investment in three years.

As with almost all window film applications, the interior comfort for occupants has been greatly improved and the harsh glare of the sun reduced by over 60 per cent. Again, it is important to note that sustainable building rating systems typically provide points for improvements that enhance energy efficiency and occupant comfort and well-being, making window film an ideal green building technology.

CASE STUDY: TEMPLE COLLEGE

Another green project involving LLumar window film took place at Temple College, Texas, the United States. The College faced a serious budget crisis as energy expenses were rapidly escalating out of control. Temple College retained the services of Johnson Controls, Inc. (JCI), who determined that numerous windows on campus were contributing substantially to the campus' overall energy inefficiency. JCI determined that LLumar solar-control window films should be an important part of an effective energy-savings strategy for the college.

It was determined by LLumar, and verified by JCI, that the Temple window film project, 2,800 square metres (30,000 square feet) in all, would produce annual energy savings of USD 34,000, with a return on investment in 3.6 years. The return on investment of individual buildings ranged from 1.3 to 8.6 years. The buildings with longer paybacks were still included in the project in order to improve occupant comfort in specific areas, and because Temple wanted the campus' buildings to have a sleek, contemporary appearance. The result of installing LLumar film to the campus' buildings was a summer peak demand savings of nearly 200 kilowatts and annual savings of over 400,000 kilowatt hours.

LLUMAR® ENERGY CONTROL FILMS

LLumar® energy-control window films are manufactured by CPFilms Inc. in Virginia, the United States, and the United Kingdom. CPFilms is the largest producer of energy-control window films and film components in the world, with distinction in the areas of research and technology, manufacturing excellence, global distribution and dedicated customer service. CPFilms is an ISO 9001:2000 certified company.

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L1779
01/09

Printed in USA

