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State of the art lighting system at Mexico City University demonstrates electricity savings of 60 to 95 per cent

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Büro Ö-Quadrat, Freiburg, the UNEP/Wuppertal Institute Collaborating Centre on Sustainable Consumption and Production (CSCP), Wuppertal, and Genertek, Mexico City, collaborated within the "WISIONS" initiative to demonstrate the major cost and energy savings that are achievable within effective climate protection programmes.

A recent lighting system renovation using commonly available technologies at the National Autonomous University of Mexico (UNAM) demonstrated the feasibility of reducing consumption of electricity by between 60 and 95 per cent. Modernising all lighting systems at UNAM with the same technologies is projected to offer total cost savings of some 68 million U.S. dollars with an initial investment of just 3 million U.S. dollars.

The project consortium carried out various lighting renovation modelling exercises in different interior areas considered as representative of the university as a whole. Different high efficiency lighting solutions were explored within the models as replacements for old lighting systems and fluorescent lamps, with options of high efficient luminaries with intelligent lighting controls, to reduce the use of artificial light and use natural daylight as the most preferred solution.

The investment costs and energy savings were systematically documented and the results indicated that an impressive 60 to 95 per cent reduction in energy consumption can be achieved, depending on operation time and space. The initial investment for these lighting improvements will be recovered through energy and maintenance cost savings in less than three years.

Enormous cost saving potential

Based on a synthesis of the results of this demonstration project a master plan has been developed to increase the lighting efficiency in all UNAM facilities, which house over 300,000 students. The master plan forecasts achieving a total lighting system renewal with only minimal initial capital investment through systematic re-investment of energy and maintenance cost savings.

The lighting system renewal plan forecasts an initial capital investment of 3 million U.S. dollars (approx. 2 million euros). By reinvesting the savings resulting from lower electricity costs over the next seven years, UNAM would save approximately US$ 68 million in electricity and operating costs for the entire lifecycle of the new lighting system. Reflecting on these figures engineer and economist Dieter Seifried, the local project manager with Büro Ö-Quadrat, commented that "there is no alternative reliable investment that can offer a higher rate of return on the invested capital".

Major contribution of lighting system efficiency to climate protection efforts

The future success of UNAM with this project offers potential for the university to serve as a beacon for universities across the globe, not least because the significance of lighting is often underestimated. "At some 20 per cent of global electricity consumption, lighting is one of the largest sources of carbon dioxide emissions" noted Carmen Dienst, Project Manager with WISIONS.

Lighting systems installed 10, 15 or more years ago are normally very inefficient by modern standards and, when considered globally, cause emissions of some 2,000 million tonnes CO_2 annually, the equivalent of about 70 percent of the carbon dioxide emissions of the worlds fleet of automobiles.

Good light for better learning

Efficient lighting not only protects the climate and reduces cost but also offers other advantages that are less easily quantified. Good high quality lighting improves the learning conditions at schools and universities – an advantage that surpasses the cost saving dimension in its value to a learning institution.

UNAM as global beacon

With some 300,000 students UNAM is the largest university in Latin America. UNAM has a reputation as the oldest and best university of that continent. "With the help of the planned lighting renovation project UNAM can become a beacon for efficient lighting" explained Michael Kuhndt, Head of the CSCP.

The tremendous cost and energy saving potential offered by efficient lighting technologies is available not only in developing countries but also in the established industrial countries of Europe and Germany.

Further information

- Project reports in German, English and Spanish can be downloaded at: www.oe2.de
- Project report (English) available at the CSCP in hard copy: CSCP, Hagenauer Straße 30, D-42107 Ostersbaum-Wuppertal E-mail: info@scp-centre.org
- Press photos can be downloaded under: www.oe2.de

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