

July+August 2009

# MEGA WHAT

WHO WERE WE ... ME POWER INDUSTRY

## ARC ENDURANCE

Simulation of lifetime arcing stresses on high-voltage circuit breakers

## COMPACT AND RELIABLE

Gas-insulated switchgear is regarded as a competitive alternative to Air-insulated switchgear

## INTERVIEW

Dr Mostafa Al Guezeri  
Dr Göetz Wehberg

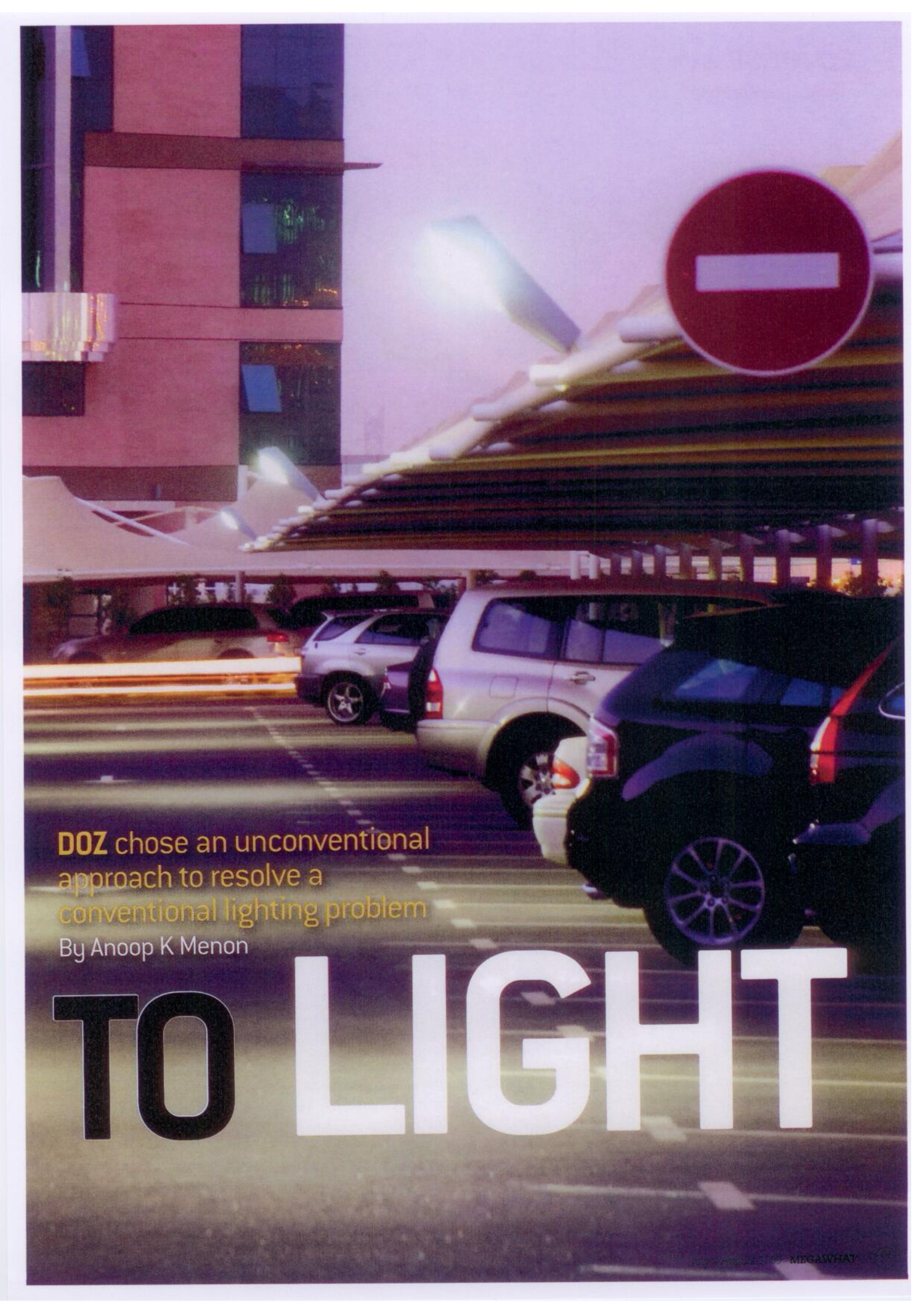
PLUS: TENDERS & CONTRACTS  
EVENTS WATCH

# FROM DARKNESS TO LIGHT

DUBAI OUTSOURCE ZONE CHOSE AN  
UNCONVENTIONAL APPROACH TO RESOLVE A  
CONVENTIONAL LIGHTING PROBLEM

cover story

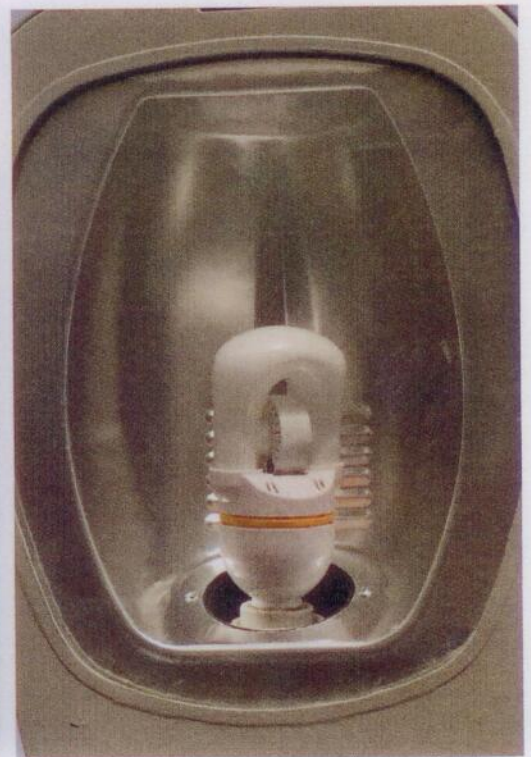
# FROM DARKNESS



**DOZ** chose an unconventional approach to resolve a conventional lighting problem

By Anoop K Menon

# TO LIGHT



**B**y mid-2008, after being operational for more than a year, Dubai Outsource Zone (DOZ) was struggling to install lights in their surface car park due to inability to connect to the utility company's distribution line. As Campus Manager of Dubai Outsource Zone (DOZ), Hamza Bawa had to find a way to light up the facility's car park since the absence of proper lighting was causing tremendous inconvenience to the tenants who have 24/7 operations. He said, "This is an isolated area, where even the street lights aren't powered yet. The original power allocation didn't have extra provision to feed the street and the car park. Lighting for the car park, designed to accommodate 800 cars, became an immediate need."

Getting conventional lighting into the car park had its own set of challenges. Even if the power allocation

came through, cables would have to be laid, trenches dug, labour hired, all involving substantial cost and time.

Incidentally, Sustainable Energy and Environment Division (SEED), a part of TECOM like DOZ had implemented a demo project, with two solar-powered car park lights in Dubai Internet City (DIC). Encouraged by the results of the pilot exercise and with the backing of SEED, Bawa decided to give solar powered lighting a try. DOZ invited suppliers to submit proposals, and selected PTL Solar, the same company which had supplied the solar lights for the DIC demo as their proposed solution met DOZ requirements with regard to illumination of the internal streets and canopies in the car parking. PTL Solar was also licensed as a supplier by ENPARK. "We told PTL Solar to put up the demo installations in DIC so that potential customers could

evaluate for themselves how these lights function, especially in the night, which has always been the biggest concern," said Sougata Nandi, Director-Sustainable Development, TECOM Investments & ENPARK.

"Initially, we procured and installed 15 units from PTL Solar, and operated them for a year. After everyone was convinced, we rolled out the solution for the entire car park," said Bawa.

While PTL Solar had put up both LED and CFL-based solar car park lights in DIC, the choice fell on CFL because DOZ wanted diffused lights. "We had tested LED lights too. However, the car park is an open area, so we wanted distributed lighting while LEDs are directional lights," said Bawa.

PTL Solar executed a turn-key project inclusive of system integration, supply and installation. At present, a total of 65 (15 existing and

50 new) solar-powered lights have been installed in the car park. The installation of the first 15 lights took a month, after which their performance was monitored for a year. Installing the next set of 50 lights from procurement to installation took only 10 days.

The solar-powered car park lights are completely integrated, self-contained, waterproof and compact. Operating as a stand-alone solution, they require no connection to the electrical grid, significantly reducing the cost of installation and eliminating ongoing operational costs.

A typical unit comprises of pole-mounted solar panels that convert sunlight into electricity, which is stored in batteries, and later used during the night to power energy efficient CFL lights (23W equivalent to the 60W light illumination). Each lighting system comprises of a solar panel of multi-crystalline cells







← rated at 80W, a sealed maintenance free battery of capacity 122 Ah operating at 12 V, a solar charge controller and a 40W induction lamp. The colour of light output is white.

The internal driveway lamps have their own panels while the canopy lights are powered in combination of threes. The solar panels are stationary and pre-adjusted to capture the maximum sunlight. They can also work with diffused sunlight which means if the panels are deprived of direct sunlight as on a cloudy day, they will still work. The panels capable of functioning under normal dust deposits generated during dust storms.

The design of the system

allows 3-5 days of lighting capability, and light level of 110-lux without sunlight availability. Further, the lights can be programmed to switch on during preferred dawn to dusk time. "For example, in the summer, we can set it from 7:00 pm to 5:00 am; in the winter, we can set it from 5.00 pm to 6.00 am. This helps to ensure optimal power consumption and longer battery life," said Bawa. DOZ has secured from PTL Solar five years warranty on the battery and 10 years on the lights.

The entire installation cost DOZ less than Dh300000. The obvious benefit is, of course, free electricity, courtesy sun. The not-so-obvious benefit is the

installation's green-field nature. "We didn't have incur expenditure on ripping out and replacing existing conventional lighting system which has offset some part of the total costs," explained Bawa. While admitting that cost savings between conventional and solar powered car park lighting could be negligible, he also contended that this initiative had more to it than mere cost benefit analysis.

Added Sougata: "This project wasn't a scientific exercise; rather, it was a practical solution. The driver was solving a problem that wasn't amenable to a conventional approach. These projects also help spread raise awareness

because people can come and see how these solar-powered lights work." If cost-benefit analysis had been used, the project may not have been approved since the payback period is in excess of 10 years. However, in the absence of alternative method of lighting the car park, this project is a successful proof of concept.

Bawa said, "What DOZ has proved is that sustainable technology can step in to resolve conventional problems which are otherwise extremely challenging to solve." Next on his agenda is extending solar-powered lighting to billboards, street advertisements and building signage. **MN**